

PROCEEDINGS  
OF THE  
TWELFTH NATIONAL CONFERENCE  
ON CITY PLANNING

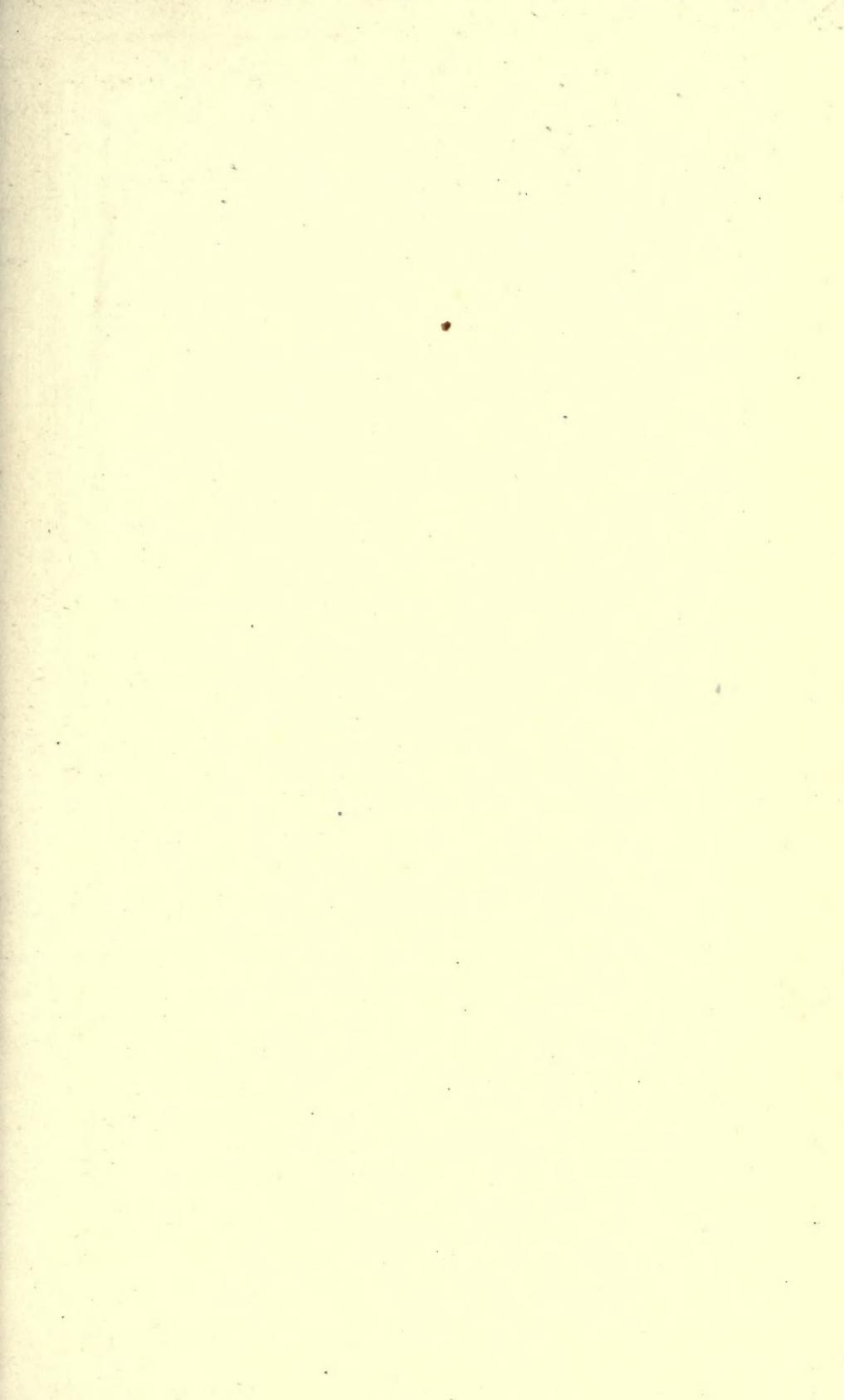
CINCINNATI

APRIL 19-22, 1920



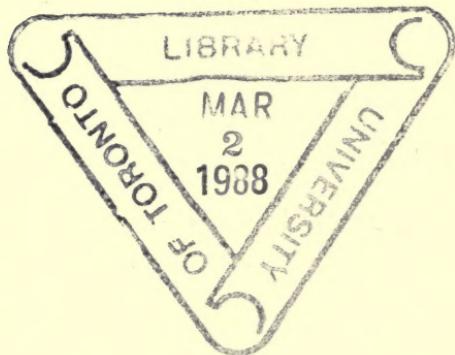
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PROCEEDINGS OF THE TWELFTH  
NATIONAL CONFERENCE ON CITY  
PLANNING, CINCINNATI, OHIO,  
APRIL 19 TO 22



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## CITY PLANNING IN ST. LOUIS

W. H. FUCHS, M.D.

*Member City Planning Commission of St. Louis*

City planning in St. Louis, in the scientific and comprehensive sense, had its real beginning with the organization of the present City Plan Commission in 1915. Prior to that date sporadic efforts had been made to solve localized problems without special reference to their place in a co-ordinated plan for the whole city. Among these latter may be mentioned the Report of the Kingshighway Commission, of 1903, a boulevard proposition; a Report of the Public Building Commission in 1904, a plan for the grouping of public buildings in a civic center; the Report of the Municipal Bridge and Terminals Commission in 1906; the proposed Parkway Plan, published in 1911 by the City Plan Association, which was formed in 1910. This latter was a voluntary citizen's organization without official power or standing. An exception to the above examples ought to be cited, however. This was the report "A City Plan for St. Louis," published by the Civic League in 1907, which was the result of studies by various committees of this organization. This was one of the earliest and very best city-planning reports in the United States, and included recommendations for large and small civic centers, an inner and outer park and boulevard scheme, improvement of the river front and a complete system of street railways.

The ordinance under which the present City Plan Commission operates was enacted by the city legislative body in 1912. The Commission is constituted of nine citizen members and five ex officio members. The first commission so constituted was appointed in 1912 and during the major part of three years published three reports on the Parkway and one report on the River Front Problem. The present concrete dock at the foot of North Market street, the first one on the Mississippi River, is the outgrowth of work started by the Commission. The Parkway Plan, however, was defeated in 1915 at a special election held for that one specific purpose, whereupon the whole commission resigned, and the present City Plan Commission was appointed by the Board of Public

Service and has been in uninterrupted existence and active operation since that time.

Simultaneously with the appointment of the present City Plan Commission a citizens' city plan committee was formed with the purpose of co-operating with the official body and insuring adequate support in bringing to full fruition the plans which might be evolved. The chairman of this citizens' committee was Mr. Luther Ely Smith, and much of the work that has been accomplished was the result of its activities. The most notable achievement was its securing of Mr. Harland Bartholomew as its engineering head with his employment in the same capacity by the official body as the end in view, a fact which was accomplished very soon after his coming to St. Louis from Newark, N. J. How wise the choice was, and how valuable his services have been to the future rational and orderly development and growth of St. Louis is best attested by the plan already devised and work accomplished since 1915.

Before the present City Plan Commission began the actual work of building a plan for St. Louis, it was decided to take all the interested citizens into its confidence, in consonance with the general trend of democratization. The objects in view were: (1) to establish mutual confidence and to learn what was in the minds of citizens regarding the problems to be solved by city planning; (2) to correlate the plans of one part of the city with those of another with the view of devising one harmonious unit; (3) to get the citizens of one section of the city acquainted with those of all other sections; (4) to engender active interest in city planning in general and especially support for the plan which was to be evolved for St. Louis. To accomplish these objects the city was divided into sections and public hearings in the evenings were held at the City Hall, one set aside for the general problems of the city, and one evening for each section established for this purpose. Local improvement and civic organizations and the general public were invited to the meetings of their respective sections. It was surprising to note how general was the response to the invitations and the degree of interest manifested in city planning.

Furthermore, technical bodies such as the Engineers' Club and the local chapter of the American Institute of Architects, and commercial groups, such as the Chamber of Commerce, the Merchants Exchange and the Real Estate Exchange were invited to appoint

committees on city planning whose function it should be co-operate with the official commission in all matters pertaining to problems that arose for discussion and final solution.

With this ground-plan of action mapped out, the Commission proceeded to make the fundamental studies of the city which must necessarily constitute the foundation upon which may be built any enduring plan. Traffic counts were made at about 250 points to determine the trend of traffic: (1) foot passengers; (2) automobile trucking; (3) automobile pleasure vehicles; (4) horse-drawn vehicles, and (5) trolley cars. This accurate count was charted on maps and tables and proved of immense value in drawing up a major street plan.

The next step was to make a population map representing each five families with a dot. It ought to be emphasized at this point that this map, as all other studies representing the physical character and social activities of the city, included every square foot within the corporate limits of St. Louis. The process of map making was a very laborious and costly procedure, but the end achieved fully justified the means in labor and money expended.

It was interesting to note how invariably the population followed closely the transit facilities provided by the street-car system of the city. It explained also why certain sections of the city lacked normal development because of the lack of such street-car facilities and was an invaluable aid in developing a rational plan which provides equitable development for the entire city. This Transit Plan, as will be emphasized later, is now completely developed, has been tentatively approved by the officials of the controlling corporation with practically no modification whatsoever and will be published in the near future.

The recreational facilities and the use made of them were also charted by dots on the map, each one of which represented a permit issued by the Department of Public Welfare for playing tennis, golf, baseball, etc. It illustrated graphically the zone served by each recreational center, and proved, as nothing else could have done, the necessity for providing these facilities in all parts of the city, but especially their urgent need in the most populous districts which, generally speaking, remained unserved at the present time. This was constituted the basis of the Recreational Report which has been published by the Commission.

The maps showing the use, height and area of all buildings in

the city form one of the most valuable possessions of the city today. On these maps are charted the percentage of lot occupied by each building in the city, the respective heights of all buildings and the use which is made of each building at the present time. A system of colors was used in each instance from a very light yellow to black in direct proportion to the intensiveness of property usage or occupancy. These maps were of inestimable value in studying the city for zoning and in drafting what is, with that of New York City, the most complete and comprehensive zoning plan in the United States.

With these preliminary studies completed the Commission set about to adopt a definite program of planning. It resolved itself into seven major projects:

1. River des Peres Problem.	4. Recreation.
2. Street Plan.	5. Transit and Transportation.
3. Zoning Plan.	6. Civic Art.
7. Housing.	

1. The River des Peres had long been recognized as one of the most difficult problems pressing for solution in St. Louis. The so-called "river" is a serpentine channel entering the city at its western boundary about the middle point from north to south and winding through the western portion, through the middle of magnificent Forest Park, coursing along the western city limits again and skirting practically the southwestern and southern city limits and emptying into the Mississippi River. After each heavy rainfall it becomes a raging torrent, overflowing its banks and frequently causing great damage to adjacent property and occasional loss of life.

In times of deficient rainfall the "stream" becomes a shallow creek of stagnant pools, emitting foul odors, a breeder of mosquitoes and is generally an offense to the most callous aesthetic sense and a real menace to the entire community. In short, it is nothing more or less than an open sewer with all the objectionable features attaching to such a nuisance.

It is not germane to a report of this limited character to give all the details of the solution arrived at; suffice it to say that the problem is effectually and completely solved by enclosing the stream in a single-barrel concrete sewer 32 feet in diameter from the city limits to a point at DeBaliviere and Lindell boulevards, or where it enters Forest Park, a double-barrel concrete sewer, each barrel

being 30 feet in diameter, from this point to the western city limits, and by an open concrete-lined channel for storm water with sanitary sewer beneath, the channel varying in width from 78 feet to 200 feet from the western city limits to its entrance into the Mississippi River. The course of the closed sewers and of the open channel is so designed as to eliminate all of the serpentine windings and to provide a continuous curved channel, with proper uninterrupted fall, so as to insure an uninterrupted flow of the water. Needless to say the capacity is computed in excess of the maximum drainage requirements demanded by the heaviest rainfall in the history of the city.

Along with the treatment of the stream itself a wide driveway has been provided along the high ground adjacent to the stream bed, while the lower ground will be developed for industrial purposes which will be connected with the outer belt line of railroads by a municipal railroad connecting with the municipally owned and controlled tracks along the levee and connecting with a new southern approach to the Free Bridge.

2. The Street Plan has been developed in its entirety covering all of St. Louis and providing for major and minor streets in all sections of the city, radial traffic arteries and accessory streets, insuring comfortable and ready connection of any part with any other part.

3. The Zoning Plan has been referred to and cannot be described in detail here. It, too, is all-comprehensive. No far-reaching plan such as this can be perfect in every respect and minor changes will be necessary from time to time. The chief problem in the administration of the zone ordinance now confronting the Commission is to provide additional agencies, like the Board of Appeals of New York City, to stabilize it and prevent the nullification of its operation and purposes by individuals or institutions with selfish motives and a disregard of the interests of the general public. These interests have invoked influence and power, commercial, economic and political to undermine the zone ordinance for the accomplishment of selfish ends, and it is imperatively necessary to create an instrumentality through which these baneful influences upon an otherwise practically perfect zoning plan can be checkmated in the interest of all the people of the city.

4. The Recreation Plan, too, has been developed in its entirety and is the subject of a special report published in 1917. A good

beginning in its execution has already been made in the location of recent parks and playgrounds, in accordance with the provisions of this plan. The basis of the report and the recommendations arrived at are in accordance with a scientific study of the supply and demand for various types of recreation service.

5. The Transit and Transportation Plan, as it applies to the street railway system, has been completely worked out and will be published in the near future. It provides adequate transportation facilities for every section of St. Louis, insuring equal opportunities for normal and systematic development.

6. Civic Art has been considered in part, a public building group plan for St. Louis, having been suggested in a special report. This provides for the condemnation of nine square city blocks between Market and Olive streets from south to north, and from Twelfth to Fifteenth Streets from east to west. If adopted this will create an open space between the present Municipal Courts Building and the Central Library, around which will be grouped proposed and very much needed public buildings. There will also be ample space for beautiful park development in the heart of the downtown district.

7. The Housing Problem is in many respects the most difficult of solution. A partial survey of the situation has been made and its results will be the subject of a special report to be issued shortly. In common with other large cities the building of houses has recently fallen far short of the normal demands or requirements. Add to this the abnormal demand which will inevitably result from the enormous industrial development occurring in St. Louis at present and it is not difficult to appreciate the acute character of the problem which confronts us. The high cost of material and of labor has brought house building almost to a standstill. Capital is timid, fearing that conditions are temporary, and will not move in this direction until it realizes that present conditions will probably endure long enough to insure an adequate return on the money invested.

Our program of city planning is nearly completed. Special reports have been issued on each subject as each has been solved, and all will be combined in a comprehensive plan as soon as all the problems have been finally and satisfactorily solved.

# CITY PLANNING CONFERENCE

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The following reports have been issued:

- Preliminary Districting Statement.
- River des Peres Plan.
- Kingshighway.
- Problems of St. Louis
- Major Street Plan.
- First Annual Report.
- Zoning Ordinance and Maps.
- Second Annual Report.
- St. Louis After the War.
- Third Annual Report
- Twelfth street—St. Louis' Most Needed Throughfare.
- A Public Building Group Plan for St. Louis.
- The Zone Plan.
- Transit Report (in print).
- Housing Report (in print).

The following street projects are in the stage of development indicated in each instance:

Project		Ord. Pre- pared	Ord. Pend- ing	Ord. Passed	Under Constr.	Approved Cost
Billion—Manchester to Oakland..	Wid'g to 80'			*		\$28,066
Chippewa—Grand to K'shway....	" " "	*		*		65,092
Delmar—Morgan cut-off.....		*				106,000
Hampton—Oakland to Gravois..	Op'g 80' W					100,000
Kingshighway SW.....	Wid'g 130'				*	24,000
K'shway—Easton to Penrose....	" 150'				*	163,898
K'shway, NW — Penrose Pk. to Bdway.....	Op. 104'-130'	*				141,248
Gravois—Park to Grand Wid....	Wid. 100'	*				1,245,828
Lafayette av. ext. into 12th....	Op. 120'				*	72,268
Morgan—High to 14th.....	Wid. 80'			*		56,000
Newstead—McPherson cut-off..				*		4,040
Olive—12th to Chann'g.....	Wid. 100'			*		3,188,702
Pine—Grand cut-off.....				*		129,720
12th—Market to Spruce.....	Wid. 150'			*		171,586
12th—Chouteau to Park.....	Op. 80'				*	245,467
12th—Park to Calhoun.....	Wid. 100'					
12th—Was'ton to Florrant....	Op. W. 98'			*		1,500,000
Nat. B.—Florrant to City Limits.	Wid. 100'			*		769,760
Skinker—Bodiamenti Connection	Op. 80'			*		44,044
Vandt—Market to Chouteau....	Wid. 80'			*		170,402
Wash'ton—Jefferson to Grand..	" 80'				*	552,511
Watson Rd.—Southwest to City L	" 80'				*	14,546
Lindell—Channing to Grand....	" 80'			*		80,000
Vanvtr—Market-Wash'ton.....	" 80'			*		210,780
" Chouteau-Hunt.....	" 80'	*				57,710
Chouteau-Compton cut-off.....				*		20,304
Prairie—St. Louis " .....		*				11,280

\*Star indicates progress of project.

## CITY PLANNING CONFERENCE

At the Bond Election held on May 11 the following projects were approved for bond issue:

1. Elimination of Grade Crossings .....	\$905,000
2. New Fire Engine Houses .....	360,000
3. Reconstruction of Existing Streets .....	360,000
4. Establishing a Modern Street Lighting System .....	1,000,000
5. Municipal Farm .....	400,000
	<hr/>
	\$3,025,000

## APPROPRIATIONS FOR CITY PLANNING

1911-12 .....	\$5,000
1912-13 .....	15,000
1913-14 .....	16,000
1914-15 .....	5,000
1915-16 .....	5,000
1916-17 .....	14,500
1917-18 .....	15,500 plus \$10,000, special for zoning
1918-19 .....	24,270
1919-20 .....	19,160

## CITY PLAN PROGRESS IN DETROIT

T. GLENN PHILLIPS

*Consultant, Detroit City Plan Commission*

The City Plan Commission, which became actively operative in March, 1919, just about a year ago, with specific duties to perform under the new city charter, has started a series of city-wide improvements highly practical and functional in character, such as Detroit has never before experienced. The achievements of the past year point conclusively, in our belief, to the high practicability and desirability of commissions empowered to act, as compared with the more customary commissions of the past which have been merely advisory bodies. We think that Detroit has done more constructive city planning during the past year than any other city in the country.

**STREETS AND THOROUGHFARES.** The Commission has made studies, plans and recommendations for the opening, widening or extension of over eighty streets since March 1, 1919, of which about seventy-five have been accepted by the Common Council. Many of these improvements represent the first step toward carrying out a comprehensive plan made by the Commission for future main traffic and business streets throughout the city and its environs. Among the most important are:

Dix-High-Waterloo thoroughfare widened and opened to 80' across the entire city, 12 miles in length.

Six Mile road widened to 86 feet—nearly  $7\frac{3}{4}$  miles in length.

Michigan avenue widened to 100', two miles.

Livernois avenue widened to 100' from W. Jefferson avenue to Eight Mile road, a distance of about  $8\frac{1}{2}$  miles.

Madison-Randolph street widening in downtown section.

McGraw avenue and Warren avenue extensions and widenings, etc., etc.

**LAND SUBDIVISIONS.** The approval and stamp of the Commission is required by the city charter on all new plats occurring in Detroit or within three miles of the city limits before they can be officially put on record. The Commission requires that these plats shall conform as closely as possible to existing subdivisions near-by, thus making streets as direct and continuous as possible, and rec-

ommends the dedication of property for street purposes to correspond in width with its plan for future main streets and thoroughfares. Forty-five (45) subdivision plats have been acted on by the Commission during the past year.

**PLAYGROUNDS AND PLAYFIELDS.** Owing to a \$10,000,000 park and recreation bond issue that was passed at the April, 1919, election, there has been unprecedented activity in Detroit toward building up a carefully planned park and recreation system. During the past year, the City Plan Commission has investigated 35 playground and playfield sites and about 25 different sites for parks. Twenty playground sites were recommended to the Common Council, of which 18 were accepted and ordered condemned, consisting of about 22.23 acres. Five playfields were recommended and ordered condemned by the Common Council, adding 158.44 acres to the existing playfields.

**PARKS.** Seven parks, parkways or park enlargements have been accepted and ordered condemned by the Common Council upon the recommendation of the City Plan Commission, thus adding 1744.7 acres to the park acreage which consisted of only 982 acres prior to 1919.

These park areas now being acquired by the city of Detroit represent a well distributed and balanced system, located so as to serve all of the larger residential sections and at the same time to carefully preserve the few remaining wooded areas, small water courses and other natural features particularly adaptable to park development.

To further the accessibility of every park site, the City Plan Commission is preparing plans for a 150-foot driveway which will encircle the present outlying portions of the city and form a connecting boulevard and pleasure drive joining all the parks. Certain portions of this so-called "Outer Park Drive" have already been definitely located and dedicated to the city.

**LANDSCAPE DESIGNS AND PLANTING PLANS.** Plans for all landscape work done by the city of Detroit are provided by the City Plan Commission. To date the Commission has worked on twelve different designs or planting plan projects for parks, parkways, playfields and school grounds within the city.

**ZONING.** Under the new city charter, the City Plan Commission is to "formulate a plan to regulate and restrict the location of trades and industries and the location of buildings designed for

specific uses; to regulate and limit the height and bulk of buildings hereafter erected, and for such purposes to divide the city into zones."

Work on the Zoning Ordinance was started in July, 1919. Twelve study maps have been prepared showing the present use of all buildings; the height of existing buildings; the assessed valuation of property per front foot; the location of industries and railroad property; the number of persons per acre; the number of families per block; the location and type of all dwellings; the percentage of lot area now occupied by buildings; the vacant property available for expansion and growth within the city limits; the location and use of all buildings erected between January 1, 1909, and January 1, 1919. A map showing all city-owned property has also been prepared in connection with the Zoning work. Investigators have covered the entire city checking up existing conditions on the twelve study maps with the Sanborn's Insurance Maps of the city. The Zoning Ordinance is about completed and the Height, Use and Area Maps which will accompany it (and be made a part thereof) are fast nearing completion. It is expected that the entire ordinance will be ready for the action of the Common Council in about a month.

**THOROUGHFARE MAP.** A tentative thoroughfare or major street plan has been completed within the city limits and many of the proposed openings and widenings in connection with the thoroughfare plan have already been approved by the Common Council. We have also worked in conjunction with adjoining municipalities in street extensions and improvements outside of the present city limits.

**CO-OPERATIVE ACTIVITIES.** The City Plan Commission has been actively co-operative throughout the year with the Department of Parks and Boulevards, the Recreation Commission, the Board of Education, the Department of Public Works, the Police Department and the Fire Commission, both in an advisory capacity and in the making of plans. The Commission has always been ready to offer assistance to all other city departments on matters requiring special investigation and study.

**SURVEY OF THE PORT OF DETROIT.** A water front survey is being made at the request of the Common Council showing the harbor line, kinds and types of buildings, their use and distance back from the harbor line, which will be used in preparation of the

report for the Port of Detroit and future treatment of the water front.

**JAMES SCOTT MEMORIAL FOUNTAIN.** We have carried on the James Scott Memorial Fountain project (estimated cost \$600,000) as part of the Commission's work in the joint commission with the Park Department, and work is under way, building a stone dyke to receive earth fill on the lower end of Belle Isle, enlarging the island about eighty acres. Plans are being completed by Cass Gilbert, architect, for the architectural features of the fountain.

**EXCESS CONDEMNATION.** The Commission was instrumental in having an enabling act on excess condemnation, giving cities the power of using excess condemnation or of taking, through the exercise of "eminent domain," more land than the actual requirements of the intended improvement, introduced in the Legislature and assisted in its passage.

**PUBLICATIONS.** The City Plan Commission has published four (4) reports during the year as follows:

*No. 9. Excess Condemnation, March, 1919.* A few facts in support of proposed constitutional amendment approved by the Common Council of Detroit, March 8, 1919.

*No. 10. Dix-High-Waterloo Thoroughfare, October, 1919.* The opening, widening and connection of an important crosstown traffic route for Detroit.

*No. 11. Michigan Excess Condemnation Act, November, 1919.* An amendment to the constitution of the state of Michigan, as adopted by the Legislature in extra session, 1919, to be submitted to the vote of the people, November, 1920.

*No. 12. Building Zone Plan for Detroit, November, 1919.* A preliminary explanation of what the regulation of the use, height, and area of buildings will accomplish for Detroit.

**APPROPRIATION.** The appropriation for the year 1920 is \$25,400, made up of the items of salaries, compensation for experts, maps, etc.

## CITY PLANNING IN DALLAS, TEXAS

E. A. WOOD

*Engineer, Metropolitan Development Association*

L. V. SHERIDAN

*Engineer, Dallas Property Owners' Association*

K. K. HOOPER

*Dallas News*

Ten years ago Dallas employed George E. Kessler to prepare a city plan. As a result Dallas now has a \$6,500,000 passenger terminal, a beautiful park occupying an entire city block directly in front of this terminal, a belt-line railroad encircling that part of the city lying east of Trinity River, several street-widening projects completed, additional parks, and the famous Turtle Creek Boulevard.

**PASSENGER TERMINAL.** After an extensive survey Mr. Kessler chose a site for the passenger terminal on the river front convenient to the business district and to traction facilities. He showed that the nine railroads entering Dallas could use this terminal with economy and without loss of time. Almost immediately all of the nine railroads entered into an agreement for the joint erection of the terminal which is now in use. To guard against the invasion of undesirable structures Mr. Kessler urged the acquisition by the city of a square opposite the station to be converted into an open plaza. The city purchased this tract at a cost of \$250,000 and has spent several thousand dollars on landscape work.

**REMOVAL OF THE TEXAS AND PACIFIC TRACKS.** One of the greatest city-planning achievements for Dallas is now being effected in the removal of the Texas and Pacific tracks for almost the entire length of Pacific avenue, a one hundred foot thoroughfare paralleling the three principal business streets of Dallas. This was accomplished by detouring the trains around instead of through the city. The principal condition of the Texas and Pacific Railroad in entering into this agreement was that the city should provide it with franchises for tracks and a right of way through a district that up to this time had been retrograding because of its low topography. In this district the railroad proposes to develop an industrial section.

To purchase this right of way a citizens' committee was organized with a capital of \$700,000 which was readily subscribed by property owners on Pacific avenue who felt that the removal of these tracks would enhance the value of their property, and by property owners in the retrograding district who felt that the conversion of their property into an industrial district would remunerate them well for their investment. The city contributed \$100,000 to the fund. The belt line has been built over which the Texas and Pacific trains will soon be operating. Dallas will then be in possession of a street which was badly needed to relieve vehicular and pedestrian traffic congestion, and the grade-crossing menaces heretofore existing in the heart of the city will be entirely removed. This city-planning achievement is all the more remarkable because the railroad had a federal franchise which still had a number of years to run.

**TRINITY RIVER PROJECT.** An equally outstanding feature of the Kessler Plan was the project for the reclamation of 5500 acres of land adjacent to the Trinity River and the prevention of disastrous floods by means of a system of levees. Dallas is composed of two main masses—the main city of Dallas and the section known as Oak Cliff. Trinity River separates these two sections which are now connected by one high-level viaduct over one mile in length. This situation has resulted in a fan-shaped city which is very inefficient. It means that the average haul is twice as great as it should be in a symmetrically developed city. In the northwestern portions of the circle very little development has taken place, and will not until the river situation is controlled.

There are two ways to do this. Either high-level viaducts may be built across the valley which has a minimum width of one mile; or the river may be controlled by a levee system, large areas of the waste land on either side built up, and short bridges about 2000 feet in length spanning the space between the levees constructed where needed. The latter is the plan which has been decided upon.

On April 8, due to the efforts of the Dallas Property Owners' Association a levee improvement district was formed under state laws. The waste lands will be occupied by industries for the most part and will provide natural industrial zones which will aid greatly in the zoning of the whole city.

**IMPROVEMENT OF THE DOWNTOWN BUSINESS SECTION.** In the early part of 1919 Mr. George B. Dealey of the *Dallas News* and a member of the Governing Board of the National Conference on

City Planning succeeded in interesting the business men of the downtown business section of Dallas in improving their holdings. This section took in the property between Akard street and the Trinity River which was the original city of Dallas. The organization is known as the Dallas Property Owners' Association composed of something over 100 members who contribute \$200 a year to its support.

The Association has undertaken in the last year to carry out intensive city planning in one section, and the most important of its plans is the opening and widening of South Lamar street and its connections so as to form a cross-town thoroughfare adequate in width to handle the large volume of traffic, and the other is the straightening and leveeing of the Trinity River described above.

The Association secured agreements for widening the south portion of Lamar street where it was necessary and turned these agreements over to the city. One year after the formation of the Association a notice was sent to each member telling him that the city of Dallas had ordered the entire improvement to be made.

The Association has not tried to work out plans and cram them down the throats of the public without proper explanation. It has been the policy to sell the plan directly to those most interested. Over 315 property owners in the leveed district were interviewed and converted to the advantages of the plan.

**METROPOLITAN DEVELOPMENT ASSOCIATION.** The formation of the Dallas Property Owners' Association caused other sections of the city to awake to the need of general city planning and during last year the Chamber of Commerce has organized the Metropolitan Development Association which is now, under the direction of Mr. Kessler, carrying out extensive plans for the whole city of Dallas. Its emphasis has been on the preparation of maps which will furnish the necessary data for zoning for the city. Two maps have already been completed, one showing the uses of all land for commerce and industry, and one the uses of all lands for dwelling purposes. Tentative classifications have also been worked out and placed on the maps.

As an interesting development in city planning in Dallas the Air Service of the United States agreed to furnish free of cost to the city an aeroplane map photographed from an altitude of 6500 feet. The plates have been taken to Kelley Field and the map will be prepared there. It is felt that this map will be a great help in the

zoning of the city as the nature and uses of property can be determined at a glance.

**FINANCIAL.** The Metropolitan Development Association has raised \$10,000 among its members, and the parent organization, the Chamber of Commerce, has contributed \$21,000, making a total of \$31,000 to be devoted to city planning during the year 1920. This is exclusive of the funds of the Dallas Property Owners' Association whose work has been described above. These two organizations are affiliated and work in complete harmony toward the securing of a comprehensive plan with each other and with the Dallas City Plan Commission, a board composed of fifteen of the leading citizens.

## PROGRESS OF CITY PLANNING IN ROCHESTER, NEW YORK

E. A. FISHER

*Superintendent of City Planning*

City planning in the city of Rochester is being carried on under the provisions of special acts of the Legislature adopted in 1917 and 1918.

The acts provide for a city planning bureau in the Department of Engineering. The chief officer is the superintendent of city planning, appointed by the city engineer.

Powers and duties of the superintendent of City Planning Bureau are defined in the act as follows:

SECTION 291.—Powers and Duties of Superintendent of City Planning Bureau: *Superintendent.*

1. The Superintendent of City Planning has power to accept streets offered for dedication, and so far as possible title to the same must be acquired in fee simple absolute. The Superintendent must each month report to the Common Council the names and descriptions of streets so accepted.

2. It is the duty of the Superintendent to pass upon all proposed plans for opening, widening, extending or discontinuing streets, and an ordinance for any such purpose must not be adopted without his recommendation or approval.

3. It is the duty of the Superintendent of City Planning to prepare a city plan and to set forth thereon streets which the proper development of the city requires to be opened, widened, extended or discontinued, and the width thereof, also the sewer systems necessary to be constructed or extended, and the water mains necessary to be laid or extended, and the location of buildings, docks, parks, playgrounds, schoolhouses and municipal buildings. Such plan shall cover the territory embraced within the boundaries of the city of Rochester and also all territory within one mile of such boundaries, and such further territory outside of the city as the Superintendent may deem proper. Such plan may be made in parts from time to time covering different portions of the city or territory outside of the city. Amendments, alterations and additions to said plan or plans may be made from time to time.

*Advisory Board.*

The Act also provides for an Advisory Board consisting of the Corporation Counsel and four citizen members, appointed by the mayor.

The action of the superintendent of city planning with reference to acceptance of streets, laying out streets, zoning, etc., must be submitted by him to the Advisory Board, and if approved, becomes effective. In case any matter so submitted is disapproved by the

Advisory Board the superintendent may appeal to the mayor who, after giving a public hearing, may approve the same and it thereupon becomes effective.

The general purpose and intent of the law is to make the Bureau, so far as the initiation and carrying out of any program is concerned, a part of the City Administration.

#### RELATION OF THE ART COMMISSION TO THE CITY PLANNING BUREAU

An art commission, consisting of the mayor and four citizens, was created by an amendment to the charter in 1915. It is the opinion of many people interested in city planning that a municipal art commission and the City Planning Commission should be united. It was the opinion of our mayor also that the functions of the two boards were such that a better service would be had if they were combined, as far as possible, in the same individuals; and he desired to appoint as members of the City Planning Advisory Board members of the Art Commission. He found, however, that a provision of the charter prevented his doing so, and he therefore secured an amendment to the charter in 1918 providing that members of the Art Commission might be appointed as members of the City Planning Advisory Boards; and to carry out the purposes of this amendment he appointed the entire membership of the Art Commission, with the exception of himself, to that of the City Planning Advisory Board, the position of the mayor, as a member of the Art Commission, being taken by the Corporation Counsel on that Board.

The Advisory Board was organized on June 24, 1918, by the Hon. James G. Cutler, a former mayor of the city, and a man largely interested in the public welfare, as president.

The activities of the Bureau during the remainder of the year 1918 were confined vary largely first to the examination of plots for the subdivision of sections of the city by owners of property, or by real estate firms desiring to develop sections of the city for residential or other uses, and second in an examination of plans involving the acceptance of streets offered for dedication.

Further study was also given to the matter of the preparation of general rules and regulations relating to laying out, dedication and acceptance of streets. Also to the general provisions of the law,

and the procedure at public hearings of the Advisory Board. These rules and regulations, and method of procedure, were adopted by the superintendent and approved by the Advisory Board and printed in pamphlet form for distribution to those interested. In the meantime plans were in progress by the superintendent for dividing the city into "Use" zones, as provided by paragraph 4 of Section 291 of the charter.

A new *City Atlas* was published bringing the maps down to date of January 1, 1919. Additional copies, uncolored, of this map, were procured, and the use of all property within the city was indicated on these maps by color.

In the meantime rules and regulations for "Use" districts were in preparation, and the superintendent employed Mr. B. A. Halde- man as consultant, and the work of preparing the tentative zoning map was under the charge of Mr. Walter H. Cassebeer, a local landscape architect; and on September 22, 1919, the rules and regulations for "Use" districts were submitted by the superin- tendent to the Advisory Board and approved by that Board.

The zoning regulations and maps cover the entire city, and while they went into operation on September 22, 1919, a provision of the rules and regulations provides that the superintendent of city planning, with the approval of the Advisory Board may, from time to time, on its own motion, or on petition, after public notice and hearing amend, supplement and change the rules and regulations, or the districts, as established upon the "Use" maps.

Another paragraph in the general and administrative section of the rules provides that the superintendent of city planning, with the approval of the Advisory Board, shall have power to construe these rules and regulations liberally to bring about the greatest public good.

I may say here, that since these rules were adopted on September 22, 1919, there have been minor changes in "Use" zones made by the superintendent, and submitted to the Advisory Board, at every meeting since that date.

The city of Rochester has a very large clothing industry, and the policy of the manufacturers, since zoning was adopted, has been to locate small factories in the vicinity of the residences of the people employed in this industry. We have made numerous changes in zoning to accommodate this phase of the industry. We have treated the zoning adopted on September 22 as tentative and have

not made up and distributed zoning maps for the use of the general public, and will not do so until the whole matter has been carefully reviewed by the Bureau, and such changes made as are found necessary.

I believe the general public fully approves of the zoning plan, and so far we have had no serious trouble. We have been able, in many cases, to prevent the erection of business or industry in places where it would have been detrimental to the interest of the surrounding property. In other cases where we have been satisfied that it would be for the general interests to change a zone, or to make an exception, as provided under the rules, we have not hesitated to make such change. We believe that any system of zoning, in its initial stage, should be very elastic and subject to necessary changes without too much delay.

After the Bureau has fully completed its work and is ready to turn it over to other departments or bureaus of the city, I believe it will be necessary to have provision for a board of appeals similar to what is provided in an act amending the general city law of the state of New York.

The special act referred to, amending our charter, provides for zoning for "Use" only, and contains no provision for zoning for height and area. It is the opinion of our Law Department that the Common Council has authority to include provision in the building code for zoning for both height and area. Rules and regulations, and maps, for zoning for both height and area, are now in preparation by the superintendent of city planning at the request of the Common Council.

**CITY PLAN.** In addition to the activities of the Bureau as outlined, the superintendent, pursuant to the provisions of paragraph 3 of Section 291 of the City Planning Act, has prepared plans for the development of a large portion of undeveloped or partially developed sections of the city and its immediate suburbs.

Plans have also been prepared for the widening of a number of thoroughfares, and the connecting or extension of streets for the purpose of making thoroughfares. The Erie Canal which passes directly through the city will be abandoned this year. Plans have been prepared for the utilization of this abandoned canal as a rapid transit line for the suburban railways entering the city and also for a freight line connecting all of the railroads in the city with the Barge Canal Terminal. This Terminal is located on the Genesee

River which is made a part of the Barge Canal from its junction to the central part of the city, a distance of about three miles. The plans for the utilization of the Erie Canal in the central part of the city provide for a parallel street to our Main Street above the tracks of the interurban and freight railways.

## CLEVELAND'S PROGRESS IN CITY PLANNING

CHARLOTTE RUMBOLD

*Cleveland*

Cleveland has made progress during the past year both on the actual drawing of the city plan and on the people's understanding of what city planning means and what a planned city would mean to them. Securing this understanding is perhaps as difficult a piece of work as the actual building of streets and bridges. It certainly requires as technical and as expert handling.

The city plan in Cleveland to the man in the street and the woman in the home means, first of all, The Mall. So far as this part of the city plan at least is concerned, the people of Cleveland certainly understand what it might mean. It is always possible to rally the town to the defense or the improvement of The Mall. During the past year the Mall plan of Cleveland has lost one building, the Union Station, which has been transferred to the Public Square, and as recompense, perhaps, has been able to keep another one off. The Post Office Department, naively believing that the Mall plan had been destroyed by the removal of the Union Station, proposed to build an annex to the post office in what it conceived to be a propitiously waiting vacant lot. The federal authorities were rapidly undeceived. Progress has been made on the public auditorium. At this present speaking, like all other building, it is waiting for further consignments of steel.

All sorts of legally authorized commissions, boards, departments and bureaus have made and are making reports and plans.

The Rapid Transit Commission has published a rapid transit plan providing for the beginnings of a subway system by five terminal loops under the Public Square. This project, carrying a fifteen million dollar bond appropriation, will go to the vote of the people on the 27th of this month. On the same day the county commissioners will submit a bond issue for two million dollars for completing the County Criminal and Juvenile Courts Building, for which one and a quarter million has already been voted. The Health Department of the city is submitting at the same time a bond issue of three and a half million dollars for expansion and improvement of the city hospital facilities.

City-planning-wise, the Cuyahoga River, which divides Cleveland almost evenly into its eastern and western sections, is an ever present source of trouble. It is an extremely crooked river. In a distance of 3.8 miles it has twelve curves or bends amounting to nearly three complete circles. It is of great value, however, to the industrial plants situated in the valley. The industries are able to receive their cargoes from the ore boats coming across Lake Erie from the northwest with great facility. The new ore boats, however, are approximating 600 feet in length and consequently are unable to make the turns. The county commissioners endeavored to initiate straightening of the river by calling into use the Conservancy Act passed in 1914. The action was opposed by some of the property holders in the valley, and the case is still in the court.

So far as the lake front facilities are concerned, the harbor, piers and coastwise railway service which will be necessary if Cleveland is to be the ocean port, which it hopes to be after the opening of the St. Lawrence-Great Lakes route, these things are now being studied by the city engineer.

The Metropolitan Park Board has in hand the outer boulevard system and expects at the election in August of this year to submit to the voters a proposal for one-fourth of a mill assessment for ten years to go toward purchase of the lands necessary to complete the system. A survey of the needed playgrounds and parks has been completed by the Park Department together with the Recreation Survey Committee under the Cleveland Foundation.

The City Plan Commission has completed its plans for a thoroughfare system and has made studies for the setback building lines and for the zoning of the city.

Obviously, the planning engineer-wise is going forward very rapidly. To help create the public understanding of these plans which will see that they are carried out, various organizations through the city are lending assistance. For example, the Cleveland Foundation has a recreation committee which, acting with the City Park and Recreation Department, will see that the recreation plans are at least approximated to. The Chamber of Commerce has approached the problem, naturally, through financial and industrial channels. Through its committees on river and harbor improvement, housing, health and sanitation, public utilities, freight and passenger terminals, it has helped—or frustrated—the

politically authorized bodies. Through its city plan committee it has organized The University Improvement Company, which has purchased or optioned all the land surrounding the two universities, Western Reserve and Case School of Applied Science, which is not already the property of the universities, the Park Department, or the Board of Education. It is the plan to re-sell this property, to educational, cultural or religious institutions on the stipulation that they will build to conform not only in regard to such things as to size of lots and buildings and setback lines, but in cornice line, height and in general architectural excellence to the plan. It is the confident expectation of the stockholders of the company that they will be able to develop an educational and cultural center second to none in the country.

Euclid Avenue stretches from the Public Square to the University Circle, five straight miles. The City Plan Committee of the Chamber has organized a Euclid Avenue association of property holders and lessees of property on the avenue, one time famed for its beautiful residences. This association is assisting the city in establishing a width of 120 feet for the upper part of the avenue and 100 feet for the downtown business section. It proposes to establish, also, setback building lines, some architectural standards, and to generally improve the avenue so as to make it not only the axis of the physical part of the city, but its main social and business artery.

The same committee has also organized an association of property holders at the west approach to the Detroit-Superior bridge, the great high level span across the Cuyahoga River. The county and the city and private property holders here have between them appropriated or purchased unimproved or badly improved property and are inaugurating a scheme of business development which, although absolutely different from that of the University Circle, will perhaps be, in its own way, as handsome.

The Housing Committee of the Chamber of Commerce has organized The Cleveland Housing Company, whose plan and purpose is to build small houses costing from six to eight thousand dollars. This company was organized during the war period, at which time it was hoped to build houses for less money. These plans are going forward, and it is confidently expected that the first houses will be completed before midsummer.

The Chamber of Commerce for three years has been awarding

bronze medals for excellence in building to three classes of buildings—factories, apartment houses, and the commercial buildings of three or less stories known as taxpayers. The City Plan Committee in charge is of the opinion that monumental buildings and handsome residences, so far as architectural design and construction are concerned, take care of themselves. The factory, the small commercial building and the tenement or apartment houses are frequently built without the advice of architects. It was to stimulate this class of building that these three classes were selected in order that through competition improvement might be made. During the three years the committee has been in existence only five awards were made out of a possible nine. In consequence the committee, while continuing the awards, is establishing the Cleveland Architectural Bureau. This bureau is to employ such technical experts, architect, engineer and builders, as are essential. To this bureau it is expected that the lending institutions will submit plans and specifications for buildings brought to them on which loans are asked. The bureau is to grade the plans presented in proportion to their desirability, this grading to be accompanied by recommendations for improvement when desirable. The financial institutions will make this grading effective by lending a larger or smaller percentage of the cost in the ratio in which the technical bureau believes it is warranted. In this way the committee hopes that while pointing out the best buildings it will improve the average ones and prevent the erection of the poorest.

All of these business and civic organizations are engaged in the second and probably not least important part of city planning, that is making the people most concerned understand what city planning means and what it means to have a planned city.

Cleveland, finding that in common with all of the cities of Ohio there were some state laws which would be necessary to clear the way for a planned city, called together last fall, at the invitation of the Chamber of Commerce, the Ohio State Conference on City Planning. This conference succeeded in having passed at the State Assembly during the last session a very excellent law permitting the zoning of cities. It has in hand for the next session a law permitting the regional planning of metropolitan areas. It will not be difficult to secure the law, but will take all the courage, courtesy, tact, expert political and publicity skill to secure the people's understanding of what this plan means and allay the alarm

of the small suburban villages who fear that a concurrent shade tree ordinance, for example, throughout the county, means their annexation to the overpowering large city which they adjoin. Cleveland hopes, however, to lend wise leadership and to secure such an adjustment of temperaments between the technical experts of the City Planning Commission and the executives of the various political subdivisions and civic organizations that it will be possible to translate the thoughts of the wise into the words of the simple, and eventually not only secure a plan for Greater Cleveland, but have the plan understood, adopted and built.

## PROGRESS OF CITY PLANNING IN PITTSBURGH

U. N. ARTHUR

*Engineer, City Planning Commission, Pittsburgh*

Organized city planning in Pittsburgh had its inception early in the administration of Mayor William A. Magee, in 1909. Upon assuming the duties of his office, he entered upon an aggressive scheme of public improvements, notable among which were the cutting of the 'Hump' and raising of the streets in the 'Flood District.'

At this time a body of public-spirited citizens engaged the services of Mr. Frederick Law Olmsted, for the purpose of preparing a comprehensive plan of the city and recommending a definite scheme of improvements. At the same time Mr. Bion J. Arnold was engaged to make a study of the traction problem in the metropolitan districts of Pittsburgh. Since that time the subject of city planning has been given more or less prominence by the city administrations and various civic bodies.

With this definite program of co-ordinated improvements in view, Mayor Magee succeeded in launching a city-wide plan of improvements. The details of all plans and contract work came under the supervision of Mr. Joseph G. Armstrong, Director of the Department of Public Works, who as the successor to Mayor Magee was active in furthering the interests of city planning and advocated and carried to completion several new and important improvements.

The following may be mentioned as among the more conspicuous of the improvements, advocated by Mr. Olmsted and other city planners, which have been completed to date.

The reduction of the 'Hump' involved an area of approximately thirty-five acres owned by over one-hundred and eighty property holders. The maximum cut occurred at the intersection of Fifth and Wylie Avenues, amounting to 16.3 feet. As a direct result of this improvement, the William-Penn Hotel, a twenty-one-story building, and the Union Arcade, a fourteen-story commercial and office building, were erected at an approximate cost of \$5,000,000, instead of a row of one-story store buildings, which were contemplated prior to the authorization of this work.

The low-lying districts of the North Side and West End, which were periodically flooded to a depth of from six to twelve feet, were raised above the flood lines.

The Penn Avenue improvement, including the intersecting streets from the Point to Eleventh Street, which includes much of the business district of the city, was raised to an elevation of 33.90 feet, which is above all flood elevations, except those of 1835 and 1907.

South Eighteenth Street, leading from the lower area of the South Side to the hilltops, and making a direct connection with the outlying boroughs and townships on the Monongahela River, was widened and improved.

West Liberty Avenue, a main thoroughfare leading from the Sawmill Run section to the city line, connecting with the improved thoroughfares in Allegheny and Washington Counties, was widened to a width of seventy feet.

Carson Street West, through the industrial and railroad terminal districts, was widened and improved. This street was widened to permit of a roadway varying from 42 feet to 50 feet in width, a portion of which was, prior to the improvement, a narrow township road with an available roadway of about 20 feet. This improvement was accomplished at an approximate cost of \$800,000.

During this period of reconstruction and expansion the city has built a number of bridges, among which are the Manchester Bridge, the Larimer Avenue Bridge, which at the time of its construction embodied the second longest reinforced concrete arch span in the world, the Bloomfield Bridge, the Heth's Run Bridge, the Murray Avenue Bridge and two concrete bridges on Baum Boulevard and several smaller bridges. The total cost of these bridges was about \$2,500,000.

With the signing of the Armistice, Mayor E. V. Babcock requested the Department of City Planning to submit a comprehensive list of improvements for the consideration of Council, the cost of which would be financed by a People's Bond Issue. After careful study and investigation, a schedule was decided upon, and the items submitted and authorized at a special election held in July, 1919. This issue provided for \$9,579,000 for general street improvements, \$6,000,000 for the construction of a subway, \$1,400,000 for the improvement and extension of the water supply system, \$1,110,000 for public comfort stations, additions and extensions to the Municipal Hospital, Tuberculosis Hospital and City Home, the acquisition and installation of apparatus, etc., for the extension of the Fire and Police System, \$1,815,000 for the improvement and extension of the Park System and Playgrounds,

\$750,000 for the construction and reconstruction of highway bridges and \$1,341,000 for extensions and improvements to the sewerage and drainage systems of the city.

The amount voted in this bond issue was about two and one-half times greater than any previous municipal bond issue in Pittsburgh, and was a direct result of the awakening of the public to a realization of the necessity for providing improvements which have to do with the betterment of transportation, social and living conditions of the people residing in the community, all of which was brought about through the activities and educational processes instituted by the city planners and associates throughout the country.

Among the items included in this scheme, are several of the improvements recommended in Mr. Olmsted's report. Notable, among the street improvements authorized in the bond issue and upon which active operations have been started, are:

The construction of the Boulevard of the Allies—from Liberty Avenue to Schenley Park—includes the widening of Second Avenue and Ferry Street. Second Avenue and Ferry Street were both opened at a width of 40.0 feet in the 'Town of Pittsburgh,' laid out by George Woods, Surveyor, by order to Tench Francis, Esquire, Attorney for John Penn, Jr., and John Penn, in 1784, and are, therefore, two of the oldest streets in the city. From the intersection of Grant Street and Second Avenue, the boulevard leads, eastwardly along the bluff, overlooking the Monongahela River, to Schenley Park, and thence to a connection with Beechwood Boulevard. This boulevard is planned with variable widths ranging from 80.0 feet to 120.0 feet. The boulevard, from Liberty Avenue to Schenley Park, will have a total length of 3.03 miles with a maximum grade slightly under five per cent. This particular improvement was given its impetus during a conference held under the auspices of the Water Street and Lower Downtown Triangle Improvement Association, at which time the association had the honor of the presence of the Conference President, Mr. Lewis, and Mr. Lawson Purdy, who gave much valuable advice and counsel. The estimated cost of this entire improvement is \$3,762,000.

East Ohio Street, leading from the business district of the North Side to the city line, at Millvale Borough, is to be widened from a township road to a street, having a width of 56.0 feet, at an estimated cost of \$555,000.

Diamond Street, one of the principal streets in the central business district, is to be widened in two sections, from Grant Street to

Smithfield Street and from Ferry Street to Market Place, at an estimated cost of \$528,000.00.

Mt. Washington Roadway—In many respects this is a novel improvement in so far as it provides a roadway leading along a bluff which rises abruptly from the Monongahela River to Mt. Washington at an elevation of approximately 440 feet above the water level. This roadway is to be constructed at a width of 32.0 feet which is accomplished, in greater part, by benching into the shale and solid rock of the bluff. This roadway connects the downtown district with the residential district of Mt. Washington on a grade of 6.5 per cent. which is considered, in the Pittsburgh district, a very satisfactory gradient. The estimated cost of this roadway is placed at \$801,000.

Broad Street in the East Liberty district is to be widened and extended along existing thoroughfares from North Highland Avenue to a connection with Hamilton Avenue. The existing streets have widths of 30 feet and 45 feet and are to be widened to a uniform width of 60.0 feet; at an estimated cost of \$777,000.

The new Liberty Tunnel for vehicular traffic is one of the most timely projects now under construction in the Pittsburgh district. The southward expansion of metropolitan Pittsburgh has always been handicapped by the lack of suitable roadways, and with this restriction overcome, a large territory will be made readily accessible to the heart of the city.

When completed, the new tunnel will also provide an economic route to the southward, forming a much needed link in the system of roadways radiating in all directions from the city. Its economic and commercial value in this respect is readily apparent.

This improvement, while entirely within the city limits, is being financed by the commissioners of Allegheny County. The tunnel has a total length of 5,700 feet, with a gradient of about 0.4 per cent. The tunnel consist of twin tubes, each tube having a width of 26 feet and separated by a core 33 feet in width. The contract price of this improvement is \$4,595,758.50. The utility of this improvement is to be enhanced by the construction of the Liberty Bridge connecting the north portal with the Boulevard of the Allies, immediately east of the business section of the city. The bridge will span the Pittsburgh, Cincinnati, Chicago & St. Louis Railroad, the Pittsburgh & Lake Erie Railroad, the Monongahela River and the Baltimore & Ohio Railroad.

City planning in Pittsburgh has been seriously hampered by antiquated state laws and the consequent decisions of the higher courts. Relief from this condition is anticipated by the revision of the Constitution of the State. Among the remedies which have been suggested and which, if enacted, will distinctly further the interests of city planning are the following provisions:

- (a) Authorizing the assessments against properties, whether abutting or not, which are particularly benefited by the construction, enlargement, laying out, widening, grading, or other improvements of public highways and other public works.
- (b) Authorizing municipalities to exercise the right of excess condemnation with the right to re-sell.
- (c) Providing for the creation of incorporated districts which may extend over one or more municipalities, in order to facilitate public works for the benefit of such districts.
- (d) Providing for the zoning and districting of municipalities.

The State Legislature, at its session in 1919, passed an act authorizing municipalities of the second class to regulate and limit the height of buildings and the area of yards, courts and open spaces, and to regulate and restrict the location of trades and industries and the location of buildings for specified uses.

The Department of City Planning is an executive department of the city government, in charge of a city planning commission, consisting of nine prominent business and professional men appointed by the mayor. The Department is actively engaged upon the preparation of maps, plans, studies, etc., on general planning, but at present is devoting its time chiefly to zoning activities.

In addition to the commission, appointed by the mayor, a group of public-spirited citizens has formed an association known as the Citizens' Committee on City Plan. They are making a comprehensive survey and study of the metropolitan district of Pittsburgh at an approximate cost of \$250,000.

Mr. Harland Bartholomew of St. Louis, Missouri, has been engaged as consultant by both the Department of City Planning and the Citizens' Committee on City Plan.

We feel and predict that Pittsburgh will accomplish much, along the lines of comprehensive city planning, in the immediate future, that will add to the attractiveness of the city and will make it a better place in which to live and work.

## CINCINNATI'S PROBLEM OF CENTRALIZATION AND DECENTRALIZATION

GEORGE E. KESSLER

*City Planner, St. Louis, Mo.*

Cincinnati is built on the river bank on practically the only available land above high water for miles in either direction, up or down the river. That basin is of very small area bounded both to the north and west by hills, and, of course, bounded by the river, so that we have a very contracted area of land serviceable for all of those classes of activities which call for fairly level ground. For other purposes the city has the wonderful advantage of high lands and comparatively narrow valleys, making it one of the most picturesque cities in the country, an asset that cannot be overrated when the city has finally found itself and is able to take full advantage of its really wonderful topography. Visitors to the city will find wonderful outlook points, repeated all over the city, until they really begin to believe it is made up of hills and valleys only.

The City Plan of Cincinnati, as it has been developed step by step, is based upon its topography. In the beginning the straggling village at the river's edge climbed to the high levels of Fourth Street and beyond. On these level lands the entire early city found ample space for all its activities and its homes within a small area. As it expanded and found itself bounded by the hills which were difficult to reach beyond, Cincinnati became a compactly built city, decidedly centralized. Gradually the people spread to the hills on both sides of the river, and there came about a dual city. Homes were built on large properties scattered about among the valleys and hilltops, both east and west of Mill Creek valley. On the other hand, with the opportunity of comfortable living at reasonable cost, the larger part of the working population remained in densely built-up districts in the lower city—a centralization that has produced a high density of population per acre, and a population which it is difficult to supply with what now have become proper surroundings for living conditions.

The early streets were not wide; every available spot in the contracted level area was used for business or dwelling-house purposes, with the result of decidedly centralizing population. This

now calls for a decentralization and the conversion of the lower city into purely commercial and manufacturing districts. Of course, this will take a long time, but it will go on as the city grows, gradually having at its hub its working part and on the spokes and the rim outside, the part for homes.

Gradually there have developed manufacturing and residence towns in the valleys leading out from the city and on the hills above, taking practically all the available fairly level ground, and on the more rugged ground between have come the larger residential areas. Because of the broken and difficult ground for building purposes, there remain within the city large unused areas which, in spite of the densely built-up sections, have brought about a low average density over the city as a whole. Of course, this means to the city a serious difficulty in the cost of operation, since the hills and valleys have to be crossed through and over. And there are many places in the valleys and hills impossible for use for building purposes except small fringes. There are long stretches of unoccupied land, not bringing in any revenue in the form of taxation to meet the heavy cost of building streets, sewers, transportation lines and other facilities; and yet the practical plan for the future of this city must find a way of using practically all of that land for building purposes in one form or another; and the remainder for a setting that will, with the forestation of many of the side hills, make one of the most beautiful cities on the continent.

With these conditions of rugged topography, there has come a distinct safeguard against an overcrowding in the residence areas, leaving large portions of the city in single home places. The danger, on the other hand, from the existence of comparatively small areas of level ground, is in the too great centralization of population on these small spaces. With the gradual absorption of the lands of the lower basin for manufacturing and commercial uses, which will necessarily be the result of greater growth, this downtown population must continue its present move to the hills in all directions.

The people so displaced must find new homes, and unless protected through proper building regulations in new areas to be developed for dwelling-house purposes, there will come only a repetition of the dense up-building now so pronounced in the lower city. Of course, that process is going on in many other cities where the shift comes from downtown to the residence areas beyond.

Through the operation of a properly developed zoning scheme the dangers of overtaxing the land with too great a centralization of population can and should be overcome. In parts of the business district Cincinnati is already over-centralizing its workers in business buildings which are too high and which have too large a tenancy for the narrow streets serving them. Unless protected through the operations of proper regulations in zoning laws, this high centralization will operate here as elsewhere in the destruction rather than the up-building of high values. The congestion already occurring on many of the business streets calls attention to the need of a prompt study and understanding of the forces which produce either economic or non-economic conditions surrounding the business section.

In the highly centralized parts of the city the streets cannot be widened. The need therefore of prompt study and regulation of the height of buildings and the use of lands is insistent and cannot be safely postponed.

That balance between the street areas, both for vehicle and pedestrian service, and the buildings they serve, must quickly be found, or that process of shifting from present, well-established business districts to newer, more convenient ones—which is occurring in so many cities in the country—will be accelerated and will produce needless waste of present and future investment in lands and buildings. Therefore, there must be a distinct check upon further centralization in the now intensively used business district, and the prevention in the future of buildings too great in relation to the streets which serve them.

In the downtown streets both vehicle and pedestrian traffic is already too great to admit of an easy, rapid flow of travel. Some relief may be obtained in a closer regulation of the storage use of streets for standing vehicles. Relief may also be obtained by classifying vehicle traffic, and providing for passenger traffic a way separate from the movement of freight. Again, some of the narrow streets may be used as one way streets.

All these provisions, however, are palliative and not fundamental. Beyond the crowded business district it is still possible to widen at least the principal arteries; through the establishment of building lines, and a consistent execution of regulations thereunder, the streets may be gradually widened as the city rebuilds itself in the remodelling of old buildings and the erection of new ones.

The same condition of congestion occurs, due, of course, to the narrow valleys and the very small area of level land, in the case of the railways. Alongside of and attendant upon these are, of course, the manufacturing plants in the city strung out in narrow valleys, and in fact beyond the present limits of the city itself. Although the number is small, as compared to other much larger cities, it compels the city to look forward to one of two things, *i.e.*, the development close by of other level lands, which may be possible in the Little Miami Valley on the east and a bit farther north on the hills, or to the establishment of new communities far beyond the borders of Cincinnati. Therefore, it seems to be absolutely necessary to undertake these studies for Cincinnati not solely on the basis of the present municipal corporation, but as a regional plan, including the Kentucky side, where the people live in Kentucky and work in Cincinnati, and where they reach their homes in a much shorter time than if they travelled into the territory on this side of the river, adjoining the city. It is not possible to present remedies for the problems here presented, but I must call your attention again in closing to the need of depopulating the lower basin and leaving it exclusively for business and manufacturing uses before too much manufacturing area is occupied beyond the limits of the city.

## CINCINNATI'S RAPID TRANSIT SYSTEM AND THE CITY PLAN

FRANK L. RASCHIG

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An effective arrangement of the physical features of a city plan as to their relative importance would be as follows:

(1) The external transportation system. Due regard must be given for the entry into a city of trunk line railroads with ample terminal facilities, and for such connecting lines as will provide for the economical and expeditious handling of freight, and if there is a water front, facilities for properly utilizing this means of transportation. If due provision is made for getting passengers and goods into and out of the city, manufactories and general business will be attracted and population will increase.

(2) The internal transportation system. As the city grows this problem must be solved.

(3) The street system in and through which the daily business is done, and by which the people gain access to their homes and pass from these homes to their work, recreation and amusement.

(4) The park and recreation facilities upon which the comfort and health of the community are to a large degree dependent.

(5) The location of public buildings, which may render the conduct of public business convenient or difficult and may give a favorable or unfavorable impression to visitors.

Of course, there are other elements to be considered in making up a modern city, but in my opinion the five heretofore enumerated are those which are likely to give a city its physical character, to make it convenient or inconvenient, dignified or commonplace.

It is the second feature before mentioned, the internal transportation system, and more especially the proposed Rapid Transit System for the City of Cincinnati, that will be discussed this evening. Before giving the details of the proposed plan, a brief outline of the topography of Cincinnati will be given, as this has an extremely important bearing, not only on the transportation system, but all other city planning features as well, so that it is necessary to first get a clear idea of the topography of the territory within and surrounding the city.

Cincinnati is situated on the north bank of the Ohio River, the center of the city being about one and one-half miles above the mouth of Mill Creek. The Little Miami River empties into the Ohio River about seven miles above Mill Creek and the Big Miami about twelve miles below. Between the Big Miami and Little Miami bluffs rising three hundred feet or more extend in close to the river except a small plateau just above the mouth of Mill Creek. This plateau extends from Eggleston Avenue and Broadway on the east to Mill Creek on the west and McMicken Avenue on the north. This plateau is the original location of the city. From the top of these bluffs which come close to the river just below the mouth of Mill Creek and near the foot of Eggleston Avenue, the ground is very broken and undulating, rising gradually toward the north. The main streets in this part of the city are for the most part built along ridges or through natural depressions, evidently having been originally laid out as county roads, and following the lines of easiest grades. Owing to this rugged topography, the avenues of easy entrance are limited in number.

There are three main thoroughfares running from the basin of the city northward to the suburbs,—Vine Street, Reading Road and Gilbert Avenue. To the northwest, there are two running parallel to each other a couple of hundred feet apart along Mill Creek, Colerain Avenue and Spring Grove Avenue. To the east along the river, Eastern Avenue, and to the west along the river, West Sixth Street and Lower River Road. These have already been pre-empted by the city street car lines and are unavailable for rapid transit lines.

The whole problem of Rapid Transit was developed from an effort to pick up the interurban lines in the suburbs by a rapid transit terminal scheme, which would send the cars rapidly to the heart of the business section. As this problem was discussed and general plans made, it became evident that the local rapid transit problem could be met by the solution of the interurban problem. In fact, the local rapid transit problem became eventually more important than the interurban problem. In the last few years nearly all the interurban lines entering Cincinnati have become bankrupt. Some of them have been discontinued and sold for junk. Others are in receivers' hands, and the two that have been reorganized are waiting a chance for a better entrance into the city. One of the reasons, in fact perhaps the chief reason that the

interurbans are in such poor condition at present is due to the fact that they have not had an entrance into the city that would insure rapid transit within the city limits. It may be that when the Rapid Transit System is completed some of these interurban roads may be revived and reorganized, although the automobile has had the effect of lessening the importance of the Interurbans.<sup>1</sup> It has been the impression among many persons that the rapid transit scheme was strictly an interurban problem, and that now that the interurbans are not on a paying basis the whole scheme should be abandoned. But it is believed as mentioned above that local rapid transit by means of the system proposed can be developed in a manner that will help improve the whole internal transportation system. The first plan worked out in detail provided that the interurbans should not enter the city at all, but would touch the Rapid Transit System or Loop; that the interurban cars would draw up to a platform at one of the stations and transfer the passengers directly to the rapid transit cars running on the Loop. It was felt, however, that at first the traffic on the Loop would not be so great as to necessitate this cutting off of the interurbans, and the plan was revised so that the interurbans would come to the heart of the town until such time as local rapid transit would become so heavy that it would be necessary to cut off the interurbans as mentioned above.

The topographic conditions of Cincinnati and its environs seemed at first to present a problem much more difficult of solution than would have been the case in more level cities such as Columbus, Indianapolis and Chicago. But these very topographic difficulties have presented a natural plan which will give at once excellent interurban and suburban rapid transit facilities, and this, too, at a comparatively low cost. In the first place, the canal right-of-way already acquired by the city offers a direct and almost level entrance to the business district through thickly settled portions of the old city and the newer manufacturing and suburban districts, north and northwest; it provides an immediate north and

<sup>1</sup>Some have the theory that the auto-bus will eventually displace the surface cars, but I believe that if this kind of traffic becomes very heavy some restrictions will have to be placed on the same to prevent congestion and this will not aid rapid transit in the main parts of the city. Rapid transit may be aided by the auto-bus by the establishment of local routes in various suburbs which would take passengers to the rapid transit lines where they could transfer.

south line for the traction lines to Hamilton; it touches the end of the proposed Queen City Avenue viaduct which, in connection with the old Cincinnati and Westwood Railway, offers an invitation for direct connection with traction lines from the west. In the second place, ravines, as for example those at Torrence Road and Duck Creek, in which houses have not been built, furnish what are, in effect, 'open cuts' for ingress from the northeast. In the third place, there is a stretch of open country from Norwood to St. Bernard through Bond Hill which has been almost encircled by the city's recent growth northward and which will develop rapidly with proper transportation facilities.

In other words, the conditions which seemed, upon superficial observation, to present unusual difficulties, in reality simplified the solution; for the right-of-way to be acquired is cheap, the streets to be crossed are few, there are few sewer and water pipes to be replaced, except on Walnut Street from Canal to Pearl Street, and a private right-of-way ensuring speedy and direct entrance for interurban and suburban cars is easily obtainable.

Beginning at the station on Walnut Street, at Fifth Street, or Fountain Square, which station will no doubt for several years be the most important station on the Loop, the line extends northward in subway in Walnut Street to the canal; thence extends westwardly in subway in the canal or Central Parkway as it is now called, to Plum Street. On this portion centering about Race Street the Interurban Terminal Station will be located. At present only a portion of the station to be used as a combined interurban and loop station will be built. If the station in the future becomes inadequate, the Loop tracks will be built on each side with platforms; using the portion now being built exclusively as an interurban station. From Canal and Plum Streets the line extends northwardly in subway in the canal bed to Brighton, with stations at Liberty Street and Brighton. From Brighton northwardly to Carthage Pike and Ross Avenue in St. Bernard the line will be in the open, following approximately the present tow-path of the canal with a few exceptions, where on account of the sharp curvature of the canal it will be necessary to depart from the same. From this point to Smith Road and Duck Creek Road in Oakley it will be a surface line, extending over Ross Avenue and Tennessee Avenue to Norwood, thence over private right-of-way to Maple Avenue, thence to Smith Road and Duck Creek Road. Originally

this portion also was to have been entirely on private right-of-way in open cut and in subway, but because of the cost, the plan was modified, but eventually will be built as originally planned. The regular subway cars will not be operated on this portion of the route, although if these cars were equipped with trolleys in addition to the shoe for third rail, they could also be operated over this portion. From Duck Creek Road and Smith Road, the line follows in the open, on private right-of-way, Duck Creek Road, Lake Avenue and Torrence Road, passing under Madison Road at Owls' Nest Park in subway and reaching the hillside above Columbia Avenue by means of a short tunnel under the Beechwood subdivision. The line will run on a reinforced concrete trestle on the hillside above Columbia Avenue to Third Street; thence along Third Street, Martin Street, and Pearl Street, on a reinforced concrete elevated structure to Pearl and Walnut Street; thence northwardly on Walnut Street on a concrete elevated structure to a point halfway between Third and Fourth Streets where the line will enter subway and run to the station at Fifth and Walnut Streets.

It will be seen from this description and the map that the Rapid Transit line encircles the entire main portion of the city, with the exception of Price Hill, which due to its position west of Mill Creek will require special treatment for Rapid Transit. Nearly the whole interior of the Loop with the exception of some territory just south of the northern part of the line is already pretty well occupied. Due to the topography there is much hillside property which is unsuitable for dwellings, so that the property most available for residences for people of moderate means lies to the northwest, the north and especially to the northeast of the Loop. The fact that this territory lies at a great distance from the business and manufacturing districts makes imperative longer average rides than in other cities of the same population and adds to the necessity for some means of rapid ingress and egress. At present a great number who have their work in Cincinnati live in some of the towns across the river because of their accessibility and cheaper housing expense. It is probable that many of these people would move to suburbs of Cincinnati if a transit scheme was provided, whereby quick and easy access to the business district might be obtained.

The future prospects of the city are largely dependent upon the development of rapid transit facilities. People who enter the city and the residents of the suburbs need and must have quick and

convenient access to all points of the business district. This cannot be obtained by using the present avenues leading to the suburbs. Transit will become slower, as it may become necessary to add cars on the present lines. The Rapid Transit System will rather relieve this congestion, as people in the outlying districts may transfer to the Loop, making it possible to take off some of the lines of long haul from the suburbs. It will be possible to run fast suburban lines from the outlying suburbs to the loop and through the loop to the heart of the city. Or car lines may be run up to the Loop and passengers transferred.

To recite a few examples:

The running time from College Hill to Fountain Square is 57 minutes. By using the Cincinnati and Dayton Traction line to Spring Grove Avenue and then the Loop to Fountain Square, the time would be about 32 minutes, a saving of 25 minutes each way.

The running time from Madisonville to Fountain Square is 55 minutes. By using the right-of-way of the Cincinnati and Columbus Traction line, building a connection by a private right-of-way to the Loop at Smith Road and Duck Creek Road, and then running on the Loop to Fountain Square, the time would be about 28 minutes, a saving of 27 minutes each way.

The time from the B. & O. R. R. and Montgomery Road in Norwood is 40 minutes. By way of the Loop it would be about 20 minutes.

Of course Norwood is not now in the city limits, but it will be so eventually.

The time from Kennedy Heights to Fountain Square is 55 minutes. By way of the Loop it would be about 35 minutes.

The time from Westwood to Fountain Square is about 50 minutes. Using the present surface line to Brighton and the Loop to Fountain Square the time would be 38 minutes. If a fast suburban line were run over the Cincinnati and Westwood Railroad and over a viaduct at Queen City Avenue, the time would be still further reduced.

The time from Bond Hill to Fountain Square by way of Avondale is 34 minutes. By means of the Loop it would be about 23 minutes with better service.

There is no question that Cincinnati needs such a system as described. The unusual topography of the city confines the routes of cars to and from the outlying suburbs to certain lines or arteries

of travel. These arteries are therefore overcrowded, particularly during the morning and evening rush hours. Moreover, the sharp grades encountered tend to reduce the speed at which cars may be operated, so that even moderately fast service is an impossibility. In narrow streets of the business district, the congestion is decidedly objectionable, and additional steps should be taken to better conditions by removing as much as possible of the surface car traffic. At present those who work in the down town district must either spend from one and one-half to three hours a day on the street cars or live in the crowded district, where housing conditions are decidedly objectionable, and where their children have only the streets in which to play, whereas if Rapid Transit were provided they might live in a more desirable location further from their work without spending as much time in transit.

With Rapid Transit, the whole pulse and lifeblood of a city will be quickened; social intercourse will be easier, for distances will be partially annihilated. The working man can live in the suburbs and work in the city, and will not be exhausted by a long ride; the city will grow and spread out and the whole tendency will be toward a city more convenient and healthful to live in.

## CINCINNATI'S HIGHWAY SYSTEM AND THE CITY PLAN

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For many years the term City Planning brought to the mind of the average person a picture of the 'City Beautiful'—great boulevards, magnificent parks, grand civic centers. The more modern view of the subject, however, while not minimizing the great importance of the artistic and picturesque, recognizes that our cities are largely the creation of our industrial and commercial conditions and that the practical municipal utilities require first consideration. Now among the greatest of these utilities are streets and highways; in fact, the highway system of a city constitutes the framework of the city's entire physical existence. The life and growth of the city depend on the various activities of its citizens. All of these activities, whether industrial, commercial or social, require the constant use of the city streets and highways. A highway system should therefore be laid out in such manner as to best serve these various activities, by permitting the flow of traffic with the least practicable interference and with the smallest possible loss of time and energy.

The most important part of a city, of course, is the business district and the highways leading to and from this center are the most important of the entire street system. Such highways should be reasonably direct from the business center to the various secondary centers. They should be broad, of good alignment, of easy grade and well paved.

Of almost equal importance is a system of cross-highways connecting the various secondary centers with each other. Such a system not only serves the mutual needs of the secondary centers, but tends to relieve the arterial highways of unnecessary congestion by permitting traffic to seek its destination without routing through the business center.

A main traffic highway should be of generous width, whether it be of the arterial or cross-connecting type. If it carries a double line of street railway tracks which is most likely, the width between curbs should be at least fifty-six feet, this being the minimum width which will permit two lines of travel on each side of the roadway

outside of the street railway right of way. This is of great importance not only to vehicular traffic but also to street car service. It enables the faster moving vehicles to pass others and also permits vehicles of any speed to pass stationary vehicles without encroaching on the car tracks. This tends to give surface cars a clear right of way, enabling them to proceed safely at maximum speed. In a city of moderate size where the general use of subways or elevated roads is financially impracticable, the fast-moving surface car is the only rapid transit system available.

Another important advantage of a street of this width is that it permits the use of safety zones where passengers can wait for and alight from cars without danger to themselves, and without necessitating the stoppage of vehicular traffic. However, the matter of width is one which should not be carried to excess, as the crossing of a roadway over seventy feet wide, is attended with serious risk to pedestrians. Of course, wider roadways are sometimes absolutely necessary.

The physical character of the main highway should be such as to offer as little obstruction as possible to the flow of traffic. The paving should be done in the most substantial manner, and with material that will cause the least possible resistance, consistent with non-slipperiness, and that will require the minimum amount of repairing for proper maintenance.

All changes in direction should be by means of horizontal curves of large radius and all changes of grade should be by easy vertical curves. Underground conduits should be most complete and of most durable construction, so as to require the least number of future openings, either for repairs or for making service connections.

In addition to the above, every possible measure should be taken that will tend to attract through traffic to the main road and that will discourage such traffic from taking short cuts over minor residential streets. It is therefore often advisable that the minor streets be laid out in such manner that through traffic will avoid them and this can often be done by the use of narrow roadways, steeper grades, sharper curves and less convenient connections.

There are several reasons why through traffic should not invade residential streets. From the standpoint of economy, a much lighter and less costly form of paving can be used on such streets

if safe-guarded from excessive traffic. The attractiveness of such streets for residential purposes is greatly enhanced by the privacy and quiet resulting from the absence of such traffic. Besides such a policy would provide a large measure of protection to children from the menace of speeding vehicles, which is becoming one of the urgent problems of today.

The only effective way to make a real start toward bringing about such conditions is the adoption of a properly worked out and comprehensive city plan. Owing to the lack of such a plan streets are laid out and improvements projected in a haphazard fashion. The argument has been made, time and again, that we are unable to foresee the future, that we cannot tell which streets will become important and which will remain local and that therefore there should be a measure of uniformity in the width and general character of all streets. The result of this fallacy is apparent in Cincinnati as well as other cities in the many glaring examples of districts laid out in rectangular streets of practically uniform width, some few of which bear nearly all the traffic, while the others are mere expanses of paving, scarcely ever used for travel and altogether unlovely and wasteful. Such streets cost more to make and more to maintain and are not nearly as attractive for residence purposes as the streets of narrower roadway with ample planting space on either side.

Of course, the city plan, no matter how ideal in conception or how comprehensive in scope, will not work wonders in these respects in a day or a year, but when such a plan has been definitely adopted with districts set aside for various types of commercial, industrial and residential purposes, and with the main and secondary highways definitely fixed, all projects for improvements whether of minor or major importance can be undertaken with confidence and intelligence and the details worked out in accordance with the spirit of the general scheme.

The principal business section of Cincinnati occupies two terraces; the one about 60 feet and the other about 100 feet above low water in the Ohio River. The lower level, comparatively small, was formerly, during the steamboat era, the most important part of the city commercially and was solidly built up and even congested many years ago. The second level, on which is now located the greater part of the business district, extends to the foot of the steep bluffs to the north and east, but on the west slopes

gradually toward the Mill Creek Valley, a wide flood plain varying from 2,000 to 3,000 feet in width. The entire area of the two plateaux is about four square miles while the total area of Cincinnati inside the corporation lines is now about seventy square miles.

The original town of Cincinnati was laid out on these plateaux by Israel Ludlow, in 1788, on a plan modelled on the plan of the city of Philadelphia with the streets sixty-six feet in width laid out at right angles bearing N 16° W and N 74° E and with block lengths of about 400 feet.

It was bounded on the east by Broadway, on the north by Northern Row, now Seventh Street, and on the west by Western Row, now Central Avenue. Beyond to the north and west to the boundaries of the tract were outlots containing four acres each. Every other north and south street was extended to the north end of the outlots at what is now Liberty Street. A tract was reserved along the river extending from Broadway to Main Street for a public landing or common.

The Ohio River was the important natural east and west route to Cincinnati. The presence at this point of the Licking River on the south and Mill Creek and the Miami on the north, all of which had numerous tributaries made the site of Cincinnati easily accessible from all directions. Indian trails were located along these valleys. At a very early day mills and 'stations' were built along the streams; the trails being later replaced by wagon roads, which became also the means of communication with more distant points. In the valleys and on the highlands beyond villages and hamlets grew up. These were generally without direct communication with each other, but all were connected with Cincinnati, the grand focal point.

Most of these villages are now within the corporate limits of the city and the old wagon roads, now wide, well-paved thoroughfares, are the arteries of the present city.

The highlands lying to the north and east of the city basin form a succession of ridges and valleys extending to the Little Miami Valley. Those to the west of the city constitute a still more extensive system extending from Mill Creek to the Big Miami Valley. In places, the highlands take the form of steep bluffs, especially where they come close to the river, and this occurring for long stretches with both the eastern and western hills leaves only narrow strips available for lines of communication from the city to the east and west.

The principal arterial highways of Cincinnati have been largely determined as to position by the character of our rough and irregular topography. The general location of many of these highways has been so fixed from the very earliest days, as has been referred to previously. As the country became more thickly settled and the need of additional roads became apparent, many were laid out by the county, the procedure being to have viewers appointed by the county commissioners, who went over the ground and picked out the route for the proposed road and assessed damages for the land taken. Along in the forties began the era of the toll road or turnpike, as it was called. Companies were formed under charter from the state and these companies acquired rights of way between important points and proceeded to construct and maintain macadam roads, for which service they were empowered to collect toll from the traveller. These turnpikes flourished for a long time and many of our main city highways follow the lines of the old pikes.

About 1872 some of the municipal engineers began to realize that systematic efforts were necessary to control the laying out of streets, sewers and other public utilities. A Platting Commission was appointed with power to employ engineers and draftsmen to make a complete topographical map of the city. The map resulting from this survey was excellent in many ways, but was prepared in the form of very large tracings on rollers, making it inconvenient to use and difficult to reproduce. The Platting Commission laid out an extensive system of streets covering a considerable portion of the city's area. The work done in this regard by the Platting Commission was largely that of the mere draftsman and surveyor, and consequently is not of great value today to a planning engineer of sufficient vision to plan a modern street system. If, however, the old Platting Commission had been maintained, it is very probable that the quality of its work would have been greatly improved, as thought and study were brought to bear. The Commission, however, was soon abolished and its duties supposedly taken over successively by a series of administrative bodies. Such bodies, however, were the football of local politics and the control of the laying out of streets assumed a very uncertain and hazy character.

Additions and subdivisions were laid out by individuals and groups of individuals and streets were dedicated to the city, all with the idea of merely getting the most lots out of the individual

tract and with little regard to adjacent property or the city at large. Such a condition prevailed nearly to the present time. During the last few years there has been an awakening on the part of many citizens to the wastefulness and unwise of this policy and a realization of the need of some definite system. This feeling was a potent factor in bringing about the adoption of the new city charter, the most important feature of which was the provision for a City Planning Commission.

The great difficulty confronting the Commission to date has been lack of funds due to the financial condition of the city government. The preparation of a city plan is a matter of considerable expense involving much labor, thought and study and cannot be undertaken without substantial financial backing. It is to be hoped that this financial support will soon be available so that the work of preparing the plan may be commenced in earnest.

A study of Cincinnati's arterial highway system reveals many admirable features, but also discloses many not so favorable, especially when future needs are considered. The general position of the main radial highways cannot well be improved upon; in fact, they occupy nearly all the favorable strategic positions. However, their defects are many; some are too narrow, some too crooked, some too steep and some have poor terminal connections. Just how and to what extent it may be feasible to correct these defects are some of the things to be worked out when the city plan is being prepared or as soon thereafter as practicable. However, it may not be amiss to call attention to a few instances which seem to stand out clearly in their demands for attention.

**FIRST INSTANCE.**—A better and more direct connection from the center of the city to the two eastern highways, Columbia Avenue and Eastern Avenue, should be provided. This is a complicated problem and the solution cannot be indicated without much study.

**SECOND INSTANCE.**—Gilbert Avenue and Madison Road are two partially disconnected branches of what should be one great thoroughfare. A broad, direct connection should be made from Madison and Woodburn Avenues to Peebles Corner.

**THIRD INSTANCE.**—Reading Road is the great highway leading north. With its branch, Paddock Road, it forms perhaps the most important entrance into Cincinnati. It is believed that this avenue should be widened to a width of 100 feet between property lines with 70 feet between curbs and with its alignment bettered wherever possible.

**FOURTH INSTANCE.**—Some wide, direct highway should be laid out from the business center to the Brighton District, affording better connection with the city to the great converging highways, Harrison Avenue, Spring Grove Avenue and Colerain Avenue.

**FIFTH INSTANCE.**—A really comprehensive solution of the Price Hill problem is imperative. On account of the necessity of soon replacing the Eighth Street Viaduct the Engineering Department has given this problem more study than the others and has arrived at a tentative solution. This contemplates a low-level viaduct replacing the existing structure from which would branch a high-level viaduct to Price Hill, the latter dividing at an appropriate point into three routes—one to Glenway Avenue, one to Warsaw Avenue and the third by tunnel to West Eighth Street and Elberon Avenue.

Some of what might easily become the most available residential territory close to the city's center lies in Western Price Hill and the districts just beyond which would be rendered very accessible by a really adequate means of communication. Other routes have been proposed from time to time along West Sixth Street, Gest Street and Court Street, but we believe that Eighth Street occupies the strategic position and that the one great traffic viaduct adequately accommodating both street car and vehicular traffic and providing direct and comparatively low grade routes to this hill top will be found after consideration the best solution of the problem.

It is, however, in the way of cross-connecting highways that Cincinnati is most deficient and this deficiency results in the city being made up of a number of somewhat loosely-connected communities instead of being a well-articulated municipality. We of the Highway Department have been giving some consideration to this matter and have made tentative developments of a number of such routes, using existing streets as far as practicable, some of which would have to be widened and straightened in places. These routes have been indicated on the large topographical map which is being exhibited at this conference and which may be examined by those who are interested in this subject.

I would like, however, to call attention to a few of these. The most ambitious of these projects is a development of a route in the general latitude of Hopple Street, Erkenbrecher Avenue, Blair Avenue and Observatory Avenue, extending from Harrison Avenue

near McHenry Road on the west to Wooster Pike just beyond Red Bank on the east, and forming a continuous highway over eleven miles in length, connecting Westwood, Fairmount, Camp Washington, Clifton, Avondale, Walnut Hills, Hyde Park, Mt. Lookout and Red Bank. This highway while not projected as a boulevard, would serve to link together several of the parks and boulevards of the city, such as the proposed Canal Parkway, Burnet Woods Park, the Zoo Gardens, the Bloody Run boulevard, Observatory Avenue boulevard and Ault Park. Harrison Avenue the western connection is the most important highway leading out of Cincinnati to the west, while Wooster Pike is the most important highway out of the city towards the east.

Other important projects have also been studied. First, the development of a route paralleling McMillan Street by connecting up Corry Street, East Auburn Avenue and Locust Street, which latter is also connected by an easy curve with Taft Road which leads directly into Columbia Avenue at Torrence Road. Second, connecting up University Avenue with Lincoln Avenue and extending the latter to Madison Road at Wold Avenue. Third, the extension of Dana Avenue from Duck Creek Road eastward to Madison Road, connecting at this point with Wasson Road and extending the latter to Erie Avenue. Fourth, connecting Williams Avenue in Norwood with Markbreit Avenue in Oakley. Fifth, the developing of two loops in the extreme northern part of the city connecting Kennedy Heights, Pleasant Ridge, Bond Hill, Carthage and College Hill.

The downtown highway problem has not been touched on as it is believed that this will have to await the full development of the plan for a civic center, but I cannot refrain from calling attention to the great possibilities from the widening of Eighth Street from the end of the Gilbert Avenue Viaduct to the beginning of the proposed Eighth Street Viaduct to Price Hill. This in connection with the linking up of Madison Road with Gilbert Avenue and the full development of Glenway Avenue in Price Hill, would give us one magnificent thoroughfare from one end of Cincinnati to the other, the downtown portion of which would without doubt in time assume the proportions of a most important business street.

All the above outlined schemes are, of course, merely in the nature of suggestion for more thorough studies; their merits will

have to be determined by careful study of both engineering and civic features and all in the light of a general city plan.

I would here like to direct attention to what is a very evident fact, but which may not always be fully appreciated and that is that in thinking of highways, we now think in terms of the motor car almost to the exclusion of the horse-drawn vehicles. Journeys which formerly were rarely attempted and which when attempted were a matter of hours are now a matter of minutes and are undertaken with little or no compunction. Thousands who use the motor car are now familiar with all parts of the city and are interested in the proper layout and construction of good roads everywhere, although formerly they gave little thought to these things and took but slight interest in any part of the city except the portions in which they lived and in which they conducted their business. Whereas, for a long time after the arrival of the motor car it was looked upon merely as the pleasure vehicle of the rich man, it has now become the business and social necessity of the average citizen, without which our whole present method of living would have to be reconstructed. Our outlook on life has been immensely broadened by the motor car and this must and will profoundly affect our view on City Planning.

I will conclude with a few remarks as to finances.

The cost of a comprehensive development of Cincinnati's highway system will be very great, but if the city is to expand and grow and keep pace with other cities, some method must be found for financing such work. All American cities, of course, have serious difficulties in this respect, but our city is under greater handicaps than most others owing to its irregular topography and the manner in which our population is spread out in all directions with large tracts of undeveloped land between.

While downtown Cincinnati is very thickly populated, the average of population for the entire city is very small. The consequence of our topography and small density of population is that whereas the cost of highway improvements is much greater than the average, the contiguous population to pay for the improvements is much smaller than the average. In the past most large improvements have been paid for in their entirety by the city at large. The difficulties of financing the ordinary expenses of municipal government however, have been increasing all the time and it is

evident that great and expensive improvements cannot be made unless a method of financing can be arrived at.

It is believed that the only solution of this problem is the adoption of a benefit assessment plan by which the districts receiving the direct benefits of improvements would pay a considerable part of their costs. No matter how the funds are raised, however, it is very necessary that no money be wasted by haphazard improvements, but that all be considered as forming a part of a definite program to be arrived at after adoption of a definite city plan.

## SOME SUGGESTIONS FOR THE CITY PLAN OF CINCINNATI

J. H. GEST

*Director, Cincinnati Art Museum*

When our committee was appointed we realized we had no right to prepare a city plan at all; we were not experts in any respect; but we had the courage that an artist should have in taking up any problem that comes to him.

We formed our committee by adding to the painters, sculptors and decorators, an architect who has all of the vision that belongs to his art,—one of the greatest of all arts; and we added an engineer with a constructive imagination. Then we went to work.

Our first move was to get possession of topographical maps of the city. The first one was the government map, and then we got the great one prepared by the city itself. We then had Mr. Kessler's excellent plan—under which we have done wonders with our park system, and I refer you to that plan as evidence of what you can hope to accomplish when you adopt a city plan. Without a city plan you will never get any further than you did with parks until you had a park plan.

Now, we believed, furthermore, that you must have the courage of your convictions if you are going to have a city plan. You must plan. You need not build everything according to your plan to-day, or even in this generation; but what you do build must be along the lines of a definite plan, and in such manner as not to stand in the way of further improvements that are properly planned. You will make a mistake if you don't do this, and it will be a costly mistake. You have today many important structures in your city where they do not belong, and you will have to cast them away before you get through.

Now what we found first in city planning was this: in working for a city plan very few of us realized the topography of the city. We have been talking of that topography tonight, and you will probably hear more topography before we get through. You will notice on the map the great area of high ground lying west and north of the city—for Mill Creek does not come in from the north; it comes in from the northeast. You will notice that great mass

of hills on which Price Hill and Westwood are built, rising to a level of 400 feet and more north above the river. You could not build a city upon those slopes readily. You used it for residence purposes to a certain extent. Yet the city itself went off to the northeast, as though it were growing from a hand, that being the lower part of the city, up the arm; and your movement of population distribution is along that way. That is why you have congestion; the congestion results through three highways coming into a funnel. They pour all that stream of machines down into Eighth Street, and move it over to Vine; and thus everything is blocked.

Now our first thought was to remedy that; and in order to remedy that, we had to get the east end population, or the east hill population, out some other way. We brought Columbia Avenue frankly in around Mt. Adams onto Third Street, put a viaduct across Eggleston Avenue right into the end of Fifth Street, at Fifth and Pike Streets, and widened Fifth Street through to Government Square, so as to have plenty of room to get people out in that direction. Gilbert Avenue comes down onto Eighth Street at Eggleston Avenue; Reading Road comes in at the end of the canal and Eggleston Avenue. Here, then, are the three disconnected highways. In order to bring them together so that you might have a trough instead of a funnel into which the stream would pour at three places, we put a viaduct over Eggleston Avenue from Third and Eggleston Avenue clear up to the end of the canal.

Now that viaduct serves the purposes of a triple distribution. Coming and going you can go into it from East Fifth Street, and go around into Gilbert Avenue and out that way without going anywhere near Eighth and Walnut, and that whole congested section. You can work backwards and forwards through that and avoid the congestion entirely. Now that was one remedy we found.

We felt, too, that the difficulty of reaching all that western hill region must be overcome. To do it we started downtown by taking Mr. Kessler's suggestion of continuation of the canal west, extending the canal boulevard through as it ran until it struck West Court Street, and then from West Court Street out over a viaduct rising high enough to reach the level where the loop of the Warsaw Avenue car is, just at the lower end of Glenway. That gives you an exit there at that point. For the lower river traffic we thought the Eighth Street viaduct would serve. At the far end a new curve will take you easily down the river road.

Now the next problem lay farther north. Our city is cut into pieces by the north and south ravines caused by erosion. We have never connected our east and west hilltop streets into through lines. McMillan Street goes nowhere; it stops. Beyond McMillan Street there is an opportunity, and that opportunity lies through a connection to Madison Road. Now Lincoln Avenue, University Avenue and Madison Road, and away over at the foot of Fairmount, Baltimore Avenue, are three interesting elements that we linked together. We tie those together through a development which is in the neighborhood of St. Francis de Sales Church, then Reading Road, and then Burnet Avenue. This will be made clear if you will look at the map of our plan. You will see that we take Madison Road through in front of St. Francis de Sales Church, curve it around to the right and get into Chapel Street opposite the boulevard system,—the boulevard system going north and south,—a little further along Chapel we swing over through a district of small houses and into the end of Lincoln Avenue; there we get an easy flowing line into Lincoln Avenue and over to Reading Road. There it is blocked again and we must curve off to the left and take up University Avenue, making another easy flowing line. University Avenue carries us through Burnet Woods near the University; and from Burnet Woods we make a leap down the hill and cross a valley of just two miles due west. Now it may be a long, long while before you will build that, but if you realize what those great stretches, those vistas mean in cities that have been built heretofore, you will begin to consider that you would like to have that if it is ever possible, and you will leave a place in the plan to put it in some day.

There are one or two words I should like to say further. We have this in mind: you have in the eastern part of the city Columbia Avenue,—Columbia Avenue coming across a viaduct to Pike Street would give you your great National Boulevard with your figure of Victory or of Columbia if you like, on an appropriate column. Lincoln Avenue developed as I have shown makes a boulevard worthy to bear the name of Lincoln; and then, if starting where Columbia Avenue touches Eggleston Avenue you give to your great central and northern highway the name of Washington, you will have the three names to which we owe so much in this country.

## UNIFICATION OF RAILROAD LINES AND SERVICE IN CITIES

The importance of early unification of railroad lines and service in cities and the prevention of further duplication and waste has been for a long time appreciated by both the carriers and by city officials. To get at a common basis of solving the problem the National Conference on City Planning in 1919 appointed a committee to investigate, and their report was presented at the recent National Conference in Cincinnati. This committee consisted of Nelson P. Lewis, Chief Engineer of the City of New York and President National Conference City Planning; Col. Wm. J. Wilgus, former Chief Engineer, New York Central Railroad; E. P. Goodrich, Consulting Engineer, New York City; J. P. Newell, Consulting Engineer Public Service Commission of Oregon and Engineer Grand Trunk Arbitration Commission of the Canadian Government; and Charles H. Cheney, Consultant City Plan Commissions of Spokane, Portland and Berkeley.

The report is as follows:

1. Unified control and operation of all standard railroad lines, within the limits of any city, is essential both to the requirements of modern business and to the convenience of the public. It should be brought about with as little delay as possible, at the same time providing opportunities for expansion both of trackage and terminals in connection with a well-considered plan of city development. Means should be found and taken for persuading or compelling all railroads entering the city to connect up with such a unified system at the city limits. The entire question of railroad service should be considered as a whole, not with relation to one system or one part of the city only.

2. The present wasteful and needless duplication of lines and terminals inside of city limits cannot be permitted to continue. Many cities can show millions of dollars spent in unnecessary duplication of passenger stations when the same sums expended in added industrial lines would have increased both the business of the carriers and the prosperity of the city. This is a useless drain on the railroads, resulting in additional cost of operation, for which the public pays. It is a needless inconvenience to the public which can

be remedied at comparatively small cost by proper co-operation in planning by both the city and the railroads. Voluntary action on the part of one road is not to be expected and generally impracticable. The city, with the aid of the state or National Government, holds an advantageous position to undertake bringing the railroads together for such intra-city unification.

3. All shippers within the city should be free from dependence on one road for cars. In some cities shippers now have to maintain needless additional warehouses on a second line in order to insure prompt delivery of cars on the first line. This is a wasteful expense which must be added to the cost of shipping and doing business, particularly where a perishable product is involved.

4. All spurs and industrial tracks within the city limits should be 'common user' tracks, served by a belt line connected with all main lines entering the city, a fair pro rata return being made to the original owner of each line for such use.

5. Municipal ownership of intra-city lines is probably not necessary, provided there is unified control. Expansion of existing terminal companies to include all lines within city limits is probably the most economical, quickest and easiest method of accomplishing unification in most cities. New trunk lines should be allowed to hook on to the city terminal lines at the city limits, at any time in the future. This would provide for competitive lines through the country without cutting the city into further pie-shaped sections or causing further blighted areas to property within a block or two of each side of the railroad right of way through a city, as at present.

6. Provision of complete modern business facilities is essential to all industries. Railroad service, while important, is not the only one of these facilities necessary. Protected industrial districts or zones appropriately and conveniently situated, free from hampering residential requirements, with wide heavy hauling pavements, high pressure fire protection, extra large sewers for industrial wastes, etc., as well as unlimited spur tracks, are necessary in any city of consequence, and many of the progressive cities of the country have already established such zones. The fullest co-operation between the city and the railroad is necessary to make the facilities in these zones most useful in the development of business. Once such zones are established both railroads and shippers can feel safe in concentrating large investments for permanent ultimate service, not otherwise justified.

7. One of the greatest opportunities for railroads to cut down expenses and freight rates is by simplification of terminals. On most of the big roads it costs as much to get a car of freight out of the city limits, as it does to haul it 250 miles or more on the main line. Some roads report as much as thirty-five per cent. of their total freight cost in handling at terminals (from reports of O. W. R. & N. Railroad to Oregon Public Service Commission). This is by far the biggest single item to the railroads in their cost of doing business. A small saving, therefore, in terminal handling should effect a considerable amount of saving in freight cost and should be welcomed by railroads and shippers alike.

8. Whatever the origin or destination, a merchant or manufacturer should be able to receive and ship at the freight station which entails the shortest team haul.

9. Adequate expanded classification and freight yards must be provided in every city as part of its future plan as an adjunct of industrial development. These yards should have long areas uninterrupted by grade crossings preferably located at one side of or on the outskirts of the city, away from the probable expansion of business and main street traffic lines. Main railroad lines should be diverted around the city, and outside the city limits, wherever practicable, so that through freights and other through trains need not pass through the congested parts of the city. In light of the development of modern street transit, consideration should also be given to the possible advantages of relocating main passenger and freight stations away from the congested districts.

10. In cities which have water-borne commerce, whether coast or inland ports, rail and water terminals should be considered as a single rather than as separate problems; co-ordination of facilities for both methods of transportation should be insisted upon in the interest of the public and of the carriers themselves.

11. The relation of the railroad to the street system of the city should be carefully worked out. The value of the railroad to the prosperity and the very life of the city should be recognized. Wide heavy hauling pavements to freight terminals, docks and the industrial zones are equally essential and form a natural and important complement to the greatest use of railroad facilities. Direct and amply wide traffic thoroughfares should lead to all principal passenger and freight stations.

12. The elimination of grade crossings on both steam and electric

rapid transit lines is essential to public safety and convenience, to prevent the interruption of traffic and for the proper conduct of business. The problem of grade crossing eliminations should be studied in the most comprehensive way and not in a piece-meal fashion, even though the execution of the work is to be carried out gradually.

13. The fullest co-operation should be given cities by the railroads in planting and improving the appearance of borders of rights of way, yards, bridges, viaducts, stations and terminals within the city limits. Much of the present damage to adjacent property values and rentals can be done away with in this manner, at reasonably small expense, by closer working together of railroad officials, park boards and other city officers.

14. These fundamental considerations in the relation of railroads to city development we respectfully commend to railroad officials, city plan commissions, State Public Service Commissions, and to the distinguished members of the Interstate Commerce Commission, with the conviction that the grave questions of economy and public policy involved merit their fullest concurrence and co-operation.

## TERMINAL PROBLEMS IN THE CITY PLAN OF CINCINNATI

WARD BALDWIN

*Chief Engineer, Board of Trustees of Cincinnati Southern Railway*

In undertaking to prepare a map of proposed transportation terminals for Cincinnati, the Committee of Engineers to which this task was assigned has confined its work to the recording, in a general and approximate way, of the several plans for terminals that have been somewhat fully developed and which have received serious consideration.

In determining upon this limitation of its work the Committee has been influenced by a realization that a plan worthy of adoption can only be devised after a careful survey has been made of the many and intricate problems of city planning correlated therewith, and that therefore, until such data have been collected, the possibilities in the way of terminals would be best disclosed by a map showing said several plans in juxtaposition on one sheet where their relative merits could be readily compared, and further that such a map would not only help to stimulate the interest of our own citizens in the work that must be a preliminary to actual construction, but would also disclose the fact that considerable progress has already been made in respect to terminal plans which we hope our City Planning Commission will soon be able to carry to a conclusion.

While it has been the purpose of the Committee to present without prejudice a record of said plans, it appears advisable, for the information of those not familiar with our city, to call attention to certain obvious local conditions that would naturally affect the selection of a location for terminals, and, therefore, in the references to the respective plans some of said conditions are mentioned.

The peculiar topography of Cincinnati, a valley hemmed in by hills unbroken on the entire north side, has made the problem of terminal facilities for our railroads so difficult, and has interposed such a multitude of obstacles, the overcoming of which was attended by such great expense, that the growth of our railroad terminals has been unduly restricted and has fallen far short of the demands of the traffic to be handled.

For at least three quarters of a century efforts have been made by the railroad and shipping interests to evolve a generally acceptable plan for a system of terminals to supersede the uncorrelated haphazard arrangements that immediate necessities have from time to time compelled the several transportation companies to provide, for the single purpose of meeting their individual emergency demands.

The futility of these efforts has been due mainly to two causes, the lack of sufficient money, and the non-existence of a bureau, such as the City Planning Commission we now have, vested with authority and charged with the duty of preparing a harmonious plan for our city to grow up to in respect to transportation as well as all other civic needs.

The absence of such a bureau has deprived the city of the power of benefiting by the many valuable suggestions that have been made for betterments of our terminals, or of even taking any official cognizance of meritorious plans of terminals, some of which, prepared at great cost by the transportation and other interests, are in part shown on the map before you.

One of our pioneer railroad executives, Mr. J. C. Hall, then President of the O. and M. R. R. Co., proposed about seventy years ago in a communication to the *Cincinnati Gazette*, that all the land south of Water Street be vacated by the city and be used for railroad terminals. The consequent advantages to be gained in interchange between railroads entering from the east and west sides of the city, and between rail and river, have led later planners to include in the area to be exempted for railroad purposes all of the land south of Third Street and Sixth Street from Mill Creek to Main Street.

It has been planned to utilize this space for holding, interchange, and classification tracks, a train shed extending 1,200 feet from Race Street to Sycamore Street with from sixteen to twenty-four passenger tracks, and to also include a Union Passenger Station building located at Fourth and Main Streets, and an interurban terminal station on the north side of Third Street east of Vine Street. There would also be an elevated viaduct from the Pennsylvania lines on the east, through Pearl Street to Mill Creek, thus forming the missing link in a belt line around the city. A detailed plan of the tracks of this terminal scheme was prepared in 1914 by the 'Cincinnati Union Depot and Terminal Company' and placed

on file with the city, and it was claimed for it by its authors that it embraces the best features of the several plans that have been proposed during the past twenty years by the many advocates of the pre-emption of this region for railroad terminals.

The general level of this region is about ten feet below extreme high water in the Ohio River, and a fill of this depth, or some other means, would be incidental to its uninterrupted use.

The neighborhood of Fourth and Main Streets would be a desirable location for a passenger terminal on account of its proximity to the post office, larger hotels, banks, office buildings, the jobbing and retail districts, the Dixie Terminal, the Rapid Transit downtown station and the focal point of the electric street railway system.

Another section of the city that has received considerable attention as a possible site for a Union Passenger Station is the Mill Creek valley.

More than forty years since, the Trustees of the Cincinnati Southern Railway prepared tentative plans for a passenger depot for the Cincinnati Southern Railway on or near the site of their present Kenyon Avenue freight station west of Lincoln Park, but the subsequent growth of the city towards the northeast has kept the center of population steadily moving further away from this site, and for that reason its suitability for a passenger depot location has been a vanishing quality.

A committee on terminal facilities of the Cincinnati Chamber of Commerce, referring to the space needed for terminals, stated in its report of 1885 that: 'Even now it is probable that were the railroads possessed of all the land in Mill Creek bottom south of the stock yards, that they need for their own uses, not much would be left for other purposes. The liability of that land to overflow has, however, been a hindrance to its occupancy, and so long as the problem of overcoming its liability to that casualty remains unsolved, relief from our cramped condition as to the amount of land easily available in that direction will be difficult.'

The tracks of the C. S. R'y, B. & O. S. W. R. R., and C. C. C. & St. L. R. R. occupy this valley in part, and the B. & O. S. W. R. R. has acquired a large tract north of Harrison Avenue, for use as a freight yard, with a capacity of about 12,000 cars daily.

The Ohio Valley Improvement Association has planned a water terminal in Mill Creek north of Gest Street, and the contemplated

barge canal from Cincinnati to the Lakes would, according to the surveys of the U. S. Engineer Corps, have its connection with the Ohio River through Mill Creek.

The interference that additional railroad use of Mill Creek valley would offer to the plans for a barge canal and a water terminal, and the large cost of the fills needed to raise the tracks above flood level are serious objections to the location of a passenger terminal here.

A through passenger station located west of Lincoln Park with tributary tracks for storage, etc., forming a loop occupying practically the full remaining available width of the valley west of the station has had some favorable consideration, but its adoption would, in addition to the objections noted above, involve the further disadvantage of an extensive relocation of existing railroad terminals, and also the disadvantage of being far from the center of the business district.

In 1905 practically all of the railroads that now use the Central Union Passenger Depot reached an agreement to jointly build and use a Union Passenger Terminal above high water located at and west of Fourth and John Streets.

Detail plans of the tracks and buildings for this terminal were prepared by the railroads, and construction was started by building the 'Intraterminal' elevated single track that connects the C. & O. R. R. bridge with the C. H. & D. R. R. at Fifth and Baymiller Streets. The railroads, however, were obliged at that time to make very large expenditures to repair the damages caused by abnormal floods, and the depletion of their resources caused thereby compelled a suspension of construction work. The repressive policy of government control has since kept the railroads too impoverished to resume work on these or any other terminal plans, but the plans disclose that the spirit of progress is not yet killed by the oppression it has suffered.

Another location was proposed in 1905 for a Union Passenger Terminal at and west of Eighth Street and Central Avenue, but it was not favorably received by the railroads and was not carried beyond a preliminary stage.

Since the memory of man runneth not to the contrary, the improvement and extension of our freight-handling terminals has been the subject of investigation, planning, and report by the railroads, our Chamber of Commerce, various civic organizations,

public-spirited citizens, and promoters, who, seeing our rich possibilities in transportation facilities lying in fallow, have endeavored to open them to productive use and thus bring advantages to the community or reward to themselves, but the absence of a competent authority such as a Planning Commission to receive and act as a clearing house for the multitude of plans that have been thrown out to public view by their authors has resulted in their apparent neglect.

A 'Belt Railway' has been the underlying idea in practically all plans that have been proposed for better freight terminals.

In 1881 'The Cincinnati Belt Railway Company' was incorporated with a capitalization of one million dollars, for the purpose of building an elevated railroad track from the C. H. & D. R. R. at Fifth and Baymiller Streets across Fifth Street and the Big Four R. R. tracks, thence southeasterly on an elevated track to a line midway between Front and Columbia Streets; thence easterly on the same grade about 20' above the streets to the P. R. R.; thence by a depressed road along the bed of the M. & E. Canal to Brighton; thence by an elevated track to the B. & O. S. W. R. R. and south along the B. & O. and C. H. & D. R. R. tracks to the point of beginning. This 'Belt Road' plan provided a circuit over a private right-of-way near the river and along the canal bed. Its exact location near the river was never fixed, and no attempt has been made to show this plan on the map.

So far as known the practical development of this plan proceeded no further than the incorporation of a company. The prospectus of the Company contains a drawing of a cross-section of the canal bed, showing a four-track railway therein and a 48' wide roadway on each side of the canal bed.

A modification of the above proposed 'Belt Road' was recommended by the standing Committee of the Cincinnati Chamber of Commerce on Terminal Facilities in 1885. According to the plan advocated by this Committee, the 'Belt Road' would comprise the Water and Front Street connection tracks between Mill Creek and Eggleston Avenue, tracks on Eggleston Avenue and in the canal bed to Brighton, and the railroad tracks in Mill Creek valley from Brighton to Front Street. This plan also provides for the extension of the C. S. R'y tracks to the canal bed.

In 1889 Mr. H. M. Lane, President of the Lane and Bodley Co., published in the Cincinnati *Enquirer* an able discussion of 'Cincin-

nati's Present and Future as a Manufacturing City,' illustrated by a map that made the astonishing disclosure that, without building a single foot of new track, the tracks of several of the railroads were already so connected as to constitute a line fulfilling all the requirements of a 'Belt Road,' and that the only step necessary to take in order to relieve freight traffic from the congestion and excessive cost due to the absence of a belt line would be to operate as one line the belt formed by the Front Street connection track from the Mill Creek east, the P. R. R. tracks and the B. & O. R. R. tracks to Winton place, and the tracks in the Mill Creek valley to Front Street at Mill Creek.

This belt line, discovered and described by Mr. Lane thirty years ago, has formed the framework for all the plans for improvement of terminals that have been devised since that time, but the one remaining condition to be fulfilled in order to actually create a belt line, namely to use the designated tracks as a belt was not complied with until the government assumed control of the railroads in 1917, and thereupon instituted the plan of operating said tracks as a belt, with such great benefit to our transportation system that this plan of operation has been continued by the railroads since the return of the roads to their owners, and we are now, after thirty years of unfulfilled desire for a belt road, enjoying the use of a facility that has existed all that time, but has been changed from a potential to an actual asset only by the intervention of the strong arm of the government.

In 1904 all of the railroads entering Cincinnati undertook to have a comprehensive plan made for the relief of the congestion in the local freight terminals, and entrusted this work to a committee made up of representatives from each of the roads with Mr. McCrea, Vice President of the P. R. R. Co., as chairman. This Committee employed Mr. Waldo as its Chief Engineer, and after an exhaustive study and survey of traffic conditions it made a report of its findings in 1905, known as the Waldo report. The recommendations of the Committee were that a belt line largely coinciding with the line described by Mr. Lane in 1889 be adopted. The southern part of this belt, however, was to be located in Kentucky and was to include the C. & O. and L. & N. tracks, and a new line to be built westward from Covington and crossing the river on a new bridge to be built at the Riverside yards of the Big Four R. R.

In 1918, at the request of the Federal Railroad Administration,

the railroads undertook to prepare for the information of the government a comprehensive plan for the improvement of the freight terminals in Cincinnati with a view to not only relieving local congestion, but also to provide for the free movement of through traffic. The opportunity to develop a plan adequate to meet traffic requirements, with the prospect of its financing being assured and its construction being encouraged by the government as a war measure inspired the railroads to eagerly enter upon the preparation of a plan that would, if carried out, be a realization of their fairest visions of a metropolitan and through system of terminals, and in which the element of cost could be safely ignored as a limiting condition.

A committee made up of representatives of the executive, operating and engineering departments of the roads was formed, and this Committee with Mr. C. A. Wilson as its Chief Engineer submitted to the government a plan for a belt line substantially coinciding with the plan of the Waldo report, except that a new double track bridge was to be built over the river at Carrel Street, and in place of a new bridge at the Riverside yards a new double track bridge was to be built on the site of the present C. S. R'y bridge. The recommendations of the Committee also provided for double tracking a part of the C. & O. R. R., the P. R. R. track from Rendcomb Junction to the Big Four yard at Sharonville, the building of a double track in Bond Hill between the Big Four and B. & O. R. R. tracks, and the extensive enlargement of several of the railroad yards.

The Committee also recommended the building of a Union Freight Depot on the site of the present Central Union Passenger Depot, the building of small auxiliary freight depots at Eighth Street and McLean Avenue and at Court Street east of Broadway, and suggested the inauguration of a store door delivery system for freight and the operation of all terminals by a terminal company. Also the building of a Union Passenger Terminal in a location not specified.

This plan was to cost from 70 to 100 million dollars.

The trustees of the C. S. R'y, also at the same time, namely in 1918, recommended to the government, as an alternative plan, that the plan of the Committee of the railroads be adopted, except that instead of locating the southern part of the belt line in Kentucky, the Front Street connection track be double tracked and be

made the southern link of the belt; that the L. & N. bridge be connected by east and west branches at both ends with existing tracks, and that the C. S. R'y yards in McLean Avenue be enlarged so as to increase their capacity to 2,000 cars a day. This plan also contemplated the double tracking of the C. A. R'y Line and the Intraterminal connection between the C. & O. and C. H. & D. R. R.'s, the vacation of Sixth Street from Front Street to Burns Avenue and the allocation of abutting property to railroad use; also the rebuilding of the present double track C. & O. R. R. bridge and the replacing of the present single track C. S. R'y bridge by a double track bridge proportioned to carry the heaviest trains.

The consideration of these plans was, however, abandoned by the government upon the signing of the armistice.

Recently, the plan of using the canal bed from Lockland to Eggleston Avenue, and Eggleston Avenue from the canal to the river for a four-track railroad electrically operated instead of using it for the Rapid Transit Railway now building has been urged by some prominent business interests. The advantages of such a system of tracks to the industries that are and might hereafter locate along this route are apparent, and these tracks would also serve as an east and west connection between all the railroads as stated by the Cincinnati Belt Railway Company in 1881. The advocates of the revival of this plan for using the canal bed for freight tracks propose to operate these tracks through a terminal company for the equal benefit of all the roads entering the city.

The evident appropriateness of making such a use of the canal bed, however, stimulated our State Legislature when it granted to the city the right to utilize the canal bed, to impose the condition that no railroad tracks should be built therein, and this inhibition would have to be removed by special legislation before this plan could be considered.

The history of the terminal question in Cincinnati discloses a commendable activity in the making of plans, but a paucity of constructive work. The backwardness in development of terminals may, it appears, be ascribed almost solely to the need of a supervising authority, such as a planning commission to bridge the chasm between theory and practice in the solution of our terminal problem.

The one exception in the general lack of adequate terminals is the C. S. R'y. This road has three large freight stations and about

thirty miles of tracks in the city, and its facilities are ample to care for the very heavy traffic which this road handles.

In an effort to solve the passenger terminal problem the Trustees of the C. S. R'y have secured, subject to approval by popular vote, authority to issue twenty million dollars of city bonds to finance the building of a Union Passenger Terminal, and the agreement of the several roads as to its location and the payment of a rental to meet the maintenance, interest and sinking fund charges, and the approval by referendum vote, are the only necessary preliminaries to the construction of said terminal.

Driven by the spur of necessity Cincinnati's railroads have lately made a notable advance in their methods of handling L. C. L. freight. In addition to the natural obstacles offered by the local topography to the interchange business between the roads, the city has by the 'Daylight Ordinance' for nearly a half of a century restricted the use of the Front Street connection track to the night, thus interposing an artificial obstacle to the east and west movement of freight in the city that has been of incalculable damage to her commerce. From the P. R. R. and L. & N. R. R. freight houses at the east end of the river front of the business district, to the down-town stations of the Big Four R. R., B. & O. R. R., Q. & C. R. R. and the C. & O. R. R., is hardly more than a mile. A direct track along Front Street connects all of them; yet the record shows that the average time for a freight car to go between any two of these freight houses is two days and fourteen hours. It was because of these conditions that about forty per cent. of the transfer work of L. C. L. freight has until lately been performed by the Cincinnati Transfer Company with huge three-horse wagons, of which about 120 were used for this purpose; and the balance of the freight, about sixty per cent. was handled in 'trap cars' between these stations and from the substations in outlying industrial sections.

This system was costly in time and money, and promptness was an impossibility.

As a remedy for this condition, Mr. H. A. Worcester of the Big Four R. R., about two and a half years ago, introduced the use of motor trucks with removable bodies for the transfer of L. C. L. freight between local stations, and today all of the railroads in Cincinnati are using this system. The modus operandi is as follows:

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When our committee was appointed we realized we had no right to prepare a city plan at all; we were not experts in any respect; but we had the courage that an artist should have in taking up any problem that comes to him.

We formed our committee by adding to the painters, sculptors and decorators, an architect who has all of the vision that belongs to his art,—one of the greatest of all arts; and we added an engineer with a constructive imagination. Then we went to work.

Our first move was to get possession of topographical maps of the city. The first one was the government map, and then we got the great one prepared by the city itself. We then had Mr. Kessler's excellent plan—under which we have done wonders with our park system, and I refer you to that plan as evidence of what you can hope to accomplish when you adopt a city plan. Without a city plan you will never get any further than you did with parks until you had a park plan.

Now, we believed, furthermore, that you must have the courage of your convictions if you are going to have a city plan. You must plan. You need not build everything according to your plan to-day, or even in this generation; but what you do build must be along the lines of a definite plan, and in such manner as not to stand in the way of further improvements that are properly planned. You will make a mistake if you don't do this, and it will be a costly mistake. You have today many important structures in your city where they do not belong, and you will have to cast them away before you get through.

Now what we found first in city planning was this: in working for a city plan very few of us realized the topography of the city. We have been talking of that topography tonight, and you will probably hear more topography before we get through. You will notice on the map the great area of high ground lying west and north of the city—for Mill Creek does not come in from the north; it comes in from the northeast. You will notice that great mass

of hills on which Price Hill and Westwood are built, rising to a level of 400 feet and more north above the river. You could not build a city upon those slopes readily. You used it for residence purposes to a certain extent. Yet the city itself went off to the northeast, as though it were growing from a hand, that being the lower part of the city, up the arm; and your movement of population distribution is along that way. That is why you have congestion; the congestion results through three highways coming into a funnel. They pour all that stream of machines down into Eighth Street, and move it over to Vine; and thus everything is blocked.

Now our first thought was to remedy that; and in order to remedy that, we had to get the east end population, or the east hill population, out some other way. We brought Columbia Avenue frankly in around Mt. Adams onto Third Street, put a viaduct across Eggleston Avenue right into the end of Fifth Street, at Fifth and Pike Streets, and widened Fifth Street through to Government Square, so as to have plenty of room to get people out in that direction. Gilbert Avenue comes down onto Eighth Street at Eggleston Avenue; Reading Road comes in at the end of the canal and Eggleston Avenue. Here, then, are the three disconnected highways. In order to bring them together so that you might have a trough instead of a funnel into which the stream would pour at three places, we put a viaduct over Eggleston Avenue from Third and Eggleston Avenue clear up to the end of the canal.

Now that viaduct serves the purposes of a triple distribution. Coming and going you can go into it from East Fifth Street, and go around into Gilbert Avenue and out that way without going anywhere near Eighth and Walnut, and that whole congested section. You can work backwards and forwards through that and avoid the congestion entirely. Now that was one remedy we found.

We felt, too, that the difficulty of reaching all that western hill region must be overcome. To do it we started downtown by taking Mr. Kessler's suggestion of continuation of the canal west, extending the canal boulevard through as it ran until it struck West Court Street, and then from West Court Street out over a viaduct rising high enough to reach the level where the loop of the Warsaw Avenue car is, just at the lower end of Glenway. That gives you an exit there at that point. For the lower river traffic we thought the Eighth Street viaduct would serve. At the far end a new curve will take you easily down the river road.

Now the next problem lay farther north. Our city is cut into pieces by the north and south ravines caused by erosion. We have never connected our east and west hilltop streets into through lines. McMillan Street goes nowhere; it stops. Beyond McMillan Street there is an opportunity, and that opportunity lies through a connection to Madison Road. Now Lincoln Avenue, University Avenue and Madison Road, and away over at the foot of Fairmount, Baltimore Avenue, are three interesting elements that we linked together. We tie those together through a development which is in the neighborhood of St. Francis de Sales Church, then Reading Road, and then Burnet Avenue. This will be made clear if you will look at the map of our plan. You will see that we take Madison Road through in front of St. Francis de Sales Church, curve it around to the right and get into Chapel Street opposite the boulevard system,—the boulevard system going north and south,—a little further along Chapel we swing over through a district of small houses and into the end of Lincoln Avenue; there we get an easy flowing line into Lincoln Avenue and over to Reading Road. There it is blocked again and we must curve off to the left and take up University Avenue, making another easy flowing line. University Avenue carries us through Burnet Woods near the University; and from Burnet Woods we make a leap down the hill and cross a valley of just two miles due west. Now it may be a long, long while before you will build that, but if you realize what those great stretches, those vistas mean in cities that have been built heretofore, you will begin to consider that you would like to have that if it is ever possible, and you will leave a place in the plan to put it in some day.

There are one or two words I should like to say further. We have this in mind: you have in the eastern part of the city Columbia Avenue,—Columbia Avenue coming across a viaduct to Pike Street would give you your great National Boulevard with your figure of Victory or of Columbia if you like, on an appropriate column. Lincoln Avenue developed as I have shown makes a boulevard worthy to bear the name of Lincoln; and then, if starting where Columbia Avenue touches Eggleston Avenue you give to your great central and northern highway the name of Washington, you will have the three names to which we owe so much in this country.

## UNIFICATION OF RAILROAD LINES AND SERVICE IN CITIES

The importance of early unification of railroad lines and service in cities and the prevention of further duplication and waste has been for a long time appreciated by both the carriers and by city officials. To get at a common basis of solving the problem the National Conference on City Planning in 1919 appointed a committee to investigate, and their report was presented at the recent National Conference in Cincinnati. This committee consisted of Nelson P. Lewis, Chief Engineer of the City of New York and President National Conference City Planning; Col. Wm. J. Wilgus, former Chief Engineer, New York Central Railroad; E. P. Goodrich, Consulting Engineer, New York City; J. P. Newell, Consulting Engineer Public Service Commission of Oregon and Engineer Grand Trunk Arbitration Commission of the Canadian Government; and Charles H. Cheney, Consultant City Plan Commissions of Spokane, Portland and Berkeley.

The report is as follows:

1. Unified control and operation of all standard railroad lines, within the limits of any city, is essential both to the requirements of modern business and to the convenience of the public. It should be brought about with as little delay as possible, at the same time providing opportunities for expansion both of trackage and terminals in connection with a well-considered plan of city development. Means should be found and taken for persuading or compelling all railroads entering the city to connect up with such a unified system at the city limits. The entire question of railroad service should be considered as a whole, not with relation to one system or one part of the city only.

2. The present wasteful and needless duplication of lines and terminals inside of city limits cannot be permitted to continue. Many cities can show millions of dollars spent in unnecessary duplication of passenger stations when the same sums expended in added industrial lines would have increased both the business of the carriers and the prosperity of the city. This is a useless drain on the railroads, resulting in additional cost of operation, for which the public pays. It is a needless inconvenience to the public which can

be remedied at comparatively small cost by proper co-operation in planning by both the city and the railroads. Voluntary action on the part of one road is not to be expected and generally impracticable. The city, with the aid of the state or National Government, holds an advantageous position to undertake bringing the railroads together for such intra-city unification.

3. All shippers within the city should be free from dependence on one road for cars. In some cities shippers now have to maintain needless additional warehouses on a second line in order to insure prompt delivery of cars on the first line. This is a wasteful expense which must be added to the cost of shipping and doing business, particularly where a perishable product is involved.

4. All spurs and industrial tracks within the city limits should be 'common user' tracks, served by a belt line connected with all main lines entering the city, a fair pro rata return being made to the original owner of each line for such use.

5. Municipal ownership of intra-city lines is probably not necessary, provided there is unified control. Expansion of existing terminal companies to include all lines within city limits is probably the most economical, quickest and easiest method of accomplishing unification in most cities. New trunk lines should be allowed to hook on to the city terminal lines at the city limits, at any time in the future. This would provide for competitive lines through the country without cutting the city into further pie-shaped sections or causing further blighted areas to property within a block or two of each side of the railroad right of way through a city, as at present.

6. Provision of complete modern business facilities is essential to all industries. Railroad service, while important, is not the only one of these facilities necessary. Protected industrial districts or zones appropriately and conveniently situated, free from hampering residential requirements, with wide heavy hauling pavements, high pressure fire protection, extra large sewers for industrial wastes, etc., as well as unlimited spur tracks, are necessary in any city of consequence, and many of the progressive cities of the country have already established such zones. The fullest co-operation between the city and the railroad is necessary to make the facilities in these zones most useful in the development of business. Once such zones are established both railroads and shippers can feel safe in concentrating large investments for permanent ultimate service, not otherwise justified.

7. One of the greatest opportunities for railroads to cut down expenses and freight rates is by simplification of terminals. On most of the big roads it costs as much to get a car of freight out of the city limits, as it does to haul it 250 miles or more on the main line. Some roads report as much as thirty-five per cent. of their total freight cost in handling at terminals (from reports of O. W. R. & N. Railroad to Oregon Public Service Commission). This is by far the biggest single item to the railroads in their cost of doing business. A small saving, therefore, in terminal handling should effect a considerable amount of saving in freight cost and should be welcomed by railroads and shippers alike.

8. Whatever the origin or destination, a merchant or manufacturer should be able to receive and ship at the freight station which entails the shortest team haul.

9. Adequate expanded classification and freight yards must be provided in every city as part of its future plan as an adjunct of industrial development. These yards should have long areas uninterrupted by grade crossings preferably located at one side of or on the outskirts of the city, away from the probable expansion of business and main street traffic lines. Main railroad lines should be diverted around the city, and outside the city limits, wherever practicable, so that through freights and other through trains need not pass through the congested parts of the city. In light of the development of modern street transit, consideration should also be given to the possible advantages of relocating main passenger and freight stations away from the congested districts.

10. In cities which have water-borne commerce, whether coast or inland ports, rail and water terminals should be considered as a single rather than as separate problems; co-ordination of facilities for both methods of transportation should be insisted upon in the interest of the public and of the carriers themselves.

11. The relation of the railroad to the street system of the city should be carefully worked out. The value of the railroad to the prosperity and the very life of the city should be recognized. Wide heavy hauling pavements to freight terminals, docks and the industrial zones are equally essential and form a natural and important complement to the greatest use of railroad facilities. Direct and amply wide traffic thoroughfares should lead to all principal passenger and freight stations.

12. The elimination of grade crossings on both steam and electric

rapid transit lines is essential to public safety and convenience, to prevent the interruption of traffic and for the proper conduct of business. The problem of grade crossing eliminations should be studied in the most comprehensive way and not in a piece-meal fashion, even though the execution of the work is to be carried out gradually.

13. The fullest co-operation should be given cities by the railroads in planting and improving the appearance of borders of rights of way, yards, bridges, viaducts, stations and terminals within the city limits. Much of the present damage to adjacent property values and rentals can be done away with in this manner, at reasonably small expense, by closer working together of railroad officials, park boards and other city officers.

14. These fundamental considerations in the relation of railroads to city development we respectfully commend to railroad officials, city plan commissions, State Public Service Commissions, and to the distinguished members of the Interstate Commerce Commission, with the conviction that the grave questions of economy and public policy involved merit their fullest concurrence and co-operation.

## TERMINAL PROBLEMS IN THE CITY PLAN OF CINCINNATI

WARD BALDWIN

*Chief Engineer, Board of Trustees of Cincinnati Southern Railway*

In undertaking to prepare a map of proposed transportation terminals for Cincinnati, the Committee of Engineers to which this task was assigned has confined its work to the recording, in a general and approximate way, of the several plans for terminals that have been somewhat fully developed and which have received serious consideration.

In determining upon this limitation of its work the Committee has been influenced by a realization that a plan worthy of adoption can only be devised after a careful survey has been made of the many and intricate problems of city planning correlated therewith, and that therefore, until such data have been collected, the possibilities in the way of terminals would be best disclosed by a map showing said several plans in juxtaposition on one sheet where their relative merits could be readily compared, and further that such a map would not only help to stimulate the interest of our own citizens in the work that must be a preliminary to actual construction, but would also disclose the fact that considerable progress has already been made in respect to terminal plans which we hope our City Planning Commission will soon be able to carry to a conclusion.

While it has been the purpose of the Committee to present without prejudice a record of said plans, it appears advisable, for the information of those not familiar with our city, to call attention to certain obvious local conditions that would naturally affect the selection of a location for terminals, and, therefore, in the references to the respective plans some of said conditions are mentioned.

The peculiar topography of Cincinnati, a valley hemmed in by hills unbroken on the entire north side, has made the problem of terminal facilities for our railroads so difficult, and has interposed such a multitude of obstacles, the overcoming of which was attended by such great expense, that the growth of our railroad terminals has been unduly restricted and has fallen far short of the demands of the traffic to be handled.

For at least three quarters of a century efforts have been made by the railroad and shipping interests to evolve a generally acceptable plan for a system of terminals to supersede the uncorrelated haphazard arrangements that immediate necessities have from time to time compelled the several transportation companies to provide, for the single purpose of meeting their individual emergency demands.

The futility of these efforts has been due mainly to two causes, the lack of sufficient money, and the non-existence of a bureau, such as the City Planning Commission we now have, vested with authority and charged with the duty of preparing a harmonious plan for our city to grow up to in respect to transportation as well as all other civic needs.

The absence of such a bureau has deprived the city of the power of benefiting by the many valuable suggestions that have been made for betterments of our terminals, or of even taking any official cognizance of meritorious plans of terminals, some of which, prepared at great cost by the transportation and other interests, are in part shown on the map before you.

One of our pioneer railroad executives, Mr. J. C. Hall, then President of the O. and M. R. R. Co., proposed about seventy years ago in a communication to the *Cincinnati Gazette*, that all the land south of Water Street be vacated by the city and be used for railroad terminals. The consequent advantages to be gained in interchange between railroads entering from the east and west sides of the city, and between rail and river, have led later planners to include in the area to be exempted for railroad purposes all of the land south of Third Street and Sixth Street from Mill Creek to Main Street.

It has been planned to utilize this space for holding, interchange, and classification tracks, a train shed extending 1,200 feet from Race Street to Sycamore Street with from sixteen to twenty-four passenger tracks, and to also include a Union Passenger Station building located at Fourth and Main Streets, and an interurban terminal station on the north side of Third Street east of Vine Street. There would also be an elevated viaduct from the Pennsylvania lines on the east, through Pearl Street to Mill Creek, thus forming the missing link in a belt line around the city. A detailed plan of the tracks of this terminal scheme was prepared in 1914 by the 'Cincinnati Union Depot and Terminal Company' and placed

on file with the city, and it was claimed for it by its authors that it embraces the best features of the several plans that have been proposed during the past twenty years by the many advocates of the pre-emption of this region for railroad terminals.

The general level of this region is about ten feet below extreme high water in the Ohio River, and a fill of this depth, or some other means, would be incidental to its uninterrupted use.

The neighborhood of Fourth and Main Streets would be a desirable location for a passenger terminal on account of its proximity to the post office, larger hotels, banks, office buildings, the jobbing and retail districts, the Dixie Terminal, the Rapid Transit downtown station and the focal point of the electric street railway system.

Another section of the city that has received considerable attention as a possible site for a Union Passenger Station is the Mill Creek valley.

More than forty years since, the Trustees of the Cincinnati Southern Railway prepared tentative plans for a passenger depot for the Cincinnati Southern Railway on or near the site of their present Kenyon Avenue freight station west of Lincoln Park, but the subsequent growth of the city towards the northeast has kept the center of population steadily moving further away from this site, and for that reason its suitability for a passenger depot location has been a vanishing quality.

A committee on terminal facilities of the Cincinnati Chamber of Commerce, referring to the space needed for terminals, stated in its report of 1885 that: 'Even now it is probable that were the railroads possessed of all the land in Mill Creek bottom south of the stock yards, that they need for their own uses, not much would be left for other purposes. The liability of that land to overflow has, however, been a hindrance to its occupancy, and so long as the problem of overcoming its liability to that casualty remains unsolved, relief from our cramped condition as to the amount of land easily available in that direction will be difficult.'

The tracks of the C. S. R'y, B. & O. S. W. R. R., and C. C. C. & St. L. R. R. occupy this valley in part, and the B. & O. S. W. R. R. has acquired a large tract north of Harrison Avenue, for use as a freight yard, with a capacity of about 12,000 cars daily.

The Ohio Valley Improvement Association has planned a water terminal in Mill Creek north of Gest Street, and the contemplated

barge canal from Cincinnati to the Lakes would, according to the surveys of the U. S. Engineer Corps, have its connection with the Ohio River through Mill Creek.

The interference that additional railroad use of Mill Creek valley would offer to the plans for a barge canal and a water terminal, and the large cost of the fills needed to raise the tracks above flood level are serious objections to the location of a passenger terminal here.

A through passenger station located west of Lincoln Park with tributary tracks for storage, etc., forming a loop occupying practically the full remaining available width of the valley west of the station has had some favorable consideration, but its adoption would, in addition to the objections noted above, involve the further disadvantage of an extensive relocation of existing railroad terminals, and also the disadvantage of being far from the center of the business district.

In 1905 practically all of the railroads that now use the Central Union Passenger Depot reached an agreement to jointly build and use a Union Passenger Terminal above high water located at and west of Fourth and John Streets.

Detail plans of the tracks and buildings for this terminal were prepared by the railroads, and construction was started by building the 'Intraterminal' elevated single track that connects the C. & O. R. R. bridge with the C. H. & D. R. R. at Fifth and Baymiller Streets. The railroads, however, were obliged at that time to make very large expenditures to repair the damages caused by abnormal floods, and the depletion of their resources caused thereby compelled a suspension of construction work. The repressive policy of government control has since kept the railroads too impoverished to resume work on these or any other terminal plans, but the plans disclose that the spirit of progress is not yet killed by the oppression it has suffered.

Another location was proposed in 1905 for a Union Passenger Terminal at and west of Eighth Street and Central Avenue, but it was not favorably received by the railroads and was not carried beyond a preliminary stage.

Since the memory of man runneth not to the contrary, the improvement and extension of our freight-handling terminals has been the subject of investigation, planning, and report by the railroads, our Chamber of Commerce, various civic organizations,

public-spirited citizens, and promoters, who, seeing our rich possibilities in transportation facilities lying in fallow, have endeavored to open them to productive use and thus bring advantages to the community or reward to themselves, but the absence of a competent authority such as a Planning Commission to receive and act as a clearing house for the multitude of plans that have been thrown out to public view by their authors has resulted in their apparent neglect.

A 'Belt Railway' has been the underlying idea in practically all plans that have been proposed for better freight terminals.

In 1881 'The Cincinnati Belt Railway Company' was incorporated with a capitalization of one million dollars, for the purpose of building an elevated railroad track from the C. H. & D. R. R. at Fifth and Baymiller Streets across Fifth Street and the Big Four R. R. tracks, thence southeasterly on an elevated track to a line midway between Front and Columbia Streets; thence easterly on the same grade about 20' above the streets to the P. R. R.; thence by a depressed road along the bed of the M. & E. Canal to Brighton; thence by an elevated track to the B. & O. S. W. R. R. and south along the B. & O. and C. H. & D. R. R. tracks to the point of beginning. This 'Belt Road' plan provided a circuit over a private right-of-way near the river and along the canal bed. Its exact location near the river was never fixed, and no attempt has been made to show this plan on the map.

So far as known the practical development of this plan proceeded no further than the incorporation of a company. The prospectus of the Company contains a drawing of a cross-section of the canal bed, showing a four-track railway therein and a 48' wide roadway on each side of the canal bed.

A modification of the above proposed 'Belt Road' was recommended by the standing Committee of the Cincinnati Chamber of Commerce on Terminal Facilities in 1885. According to the plan advocated by this Committee, the 'Belt Road' would comprise the Water and Front Street connection tracks between Mill Creek and Eggleston Avenue, tracks on Eggleston Avenue and in the canal bed to Brighton, and the railroad tracks in Mill Creek valley from Brighton to Front Street. This plan also provides for the extension of the C. S. R'y tracks to the canal bed.

In 1889 Mr. H. M. Lane, President of the Lane and Bodley Co., published in the Cincinnati *Enquirer* an able discussion of 'Cincin-

nati's Present and Future as a Manufacturing City,' illustrated by a map that made the astonishing disclosure that, without building a single foot of new track, the tracks of several of the railroads were already so connected as to constitute a line fulfilling all the requirements of a 'Belt Road,' and that the only step necessary to take in order to relieve freight traffic from the congestion and excessive cost due to the absence of a belt line would be to operate as one line the belt formed by the Front Street connection track from the Mill Creek east, the P. R. R. tracks and the B. & O. R. R. tracks to Winton place, and the tracks in the Mill Creek valley to Front Street at Mill Creek.

This belt line, discovered and described by Mr. Lane thirty years ago, has formed the framework for all the plans for improvement of terminals that have been devised since that time, but the one remaining condition to be fulfilled in order to actually create a belt line, namely to use the designated tracks as a belt was not complied with until the government assumed control of the railroads in 1917, and thereupon instituted the plan of operating said tracks as a belt, with such great benefit to our transportation system that this plan of operation has been continued by the railroads since the return of the roads to their owners, and we are now, after thirty years of unfulfilled desire for a belt road, enjoying the use of a facility that has existed all that time, but has been changed from a potential to an actual asset only by the intervention of the strong arm of the government.

In 1904 all of the railroads entering Cincinnati undertook to have a comprehensive plan made for the relief of the congestion in the local freight terminals, and entrusted this work to a committee made up of representatives from each of the roads with Mr. McCrea, Vice President of the P. R. R. Co., as chairman. This Committee employed Mr. Waldo as its Chief Engineer, and after an exhaustive study and survey of traffic conditions it made a report of its findings in 1905, known as the Waldo report. The recommendations of the Committee were that a belt line largely coinciding with the line described by Mr. Lane in 1889 be adopted. The southern part of this belt, however, was to be located in Kentucky and was to include the C. & O. and L. & N. tracks, and a new line to be built westward from Covington and crossing the river on a new bridge to be built at the Riverside yards of the Big Four R. R.

In 1918, at the request of the Federal Railroad Administration,

the railroads undertook to prepare for the information of the government a comprehensive plan for the improvement of the freight terminals in Cincinnati with a view to not only relieving local congestion, but also to provide for the free movement of through traffic. The opportunity to develop a plan adequate to meet traffic requirements, with the prospect of its financing being assured and its construction being encouraged by the government as a war measure inspired the railroads to eagerly enter upon the preparation of a plan that would, if carried out, be a realization of their fairest visions of a metropolitan and through system of terminals, and in which the element of cost could be safely ignored as a limiting condition.

A committee made up of representatives of the executive, operating and engineering departments of the roads was formed, and this Committee with Mr. C. A. Wilson as its Chief Engineer submitted to the government a plan for a belt line substantially coinciding with the plan of the Waldo report, except that a new double track bridge was to be built over the river at Carrel Street, and in place of a new bridge at the Riverside yards a new double track bridge was to be built on the site of the present C. S. R'y bridge. The recommendations of the Committee also provided for double tracking a part of the C. & O. R. R., the P. R. R. track from Rendcomb Junction to the Big Four yard at Sharonville, the building of a double track in Bond Hill between the Big Four and B. & O. R. R. tracks, and the extensive enlargement of several of the railroad yards.

The Committee also recommended the building of a Union Freight Depot on the site of the present Central Union Passenger Depot, the building of small auxiliary freight depots at Eighth Street and McLean Avenue and at Court Street east of Broadway, and suggested the inauguration of a store door delivery system for freight and the operation of all terminals by a terminal company. Also the building of a Union Passenger Terminal in a location not specified.

This plan was to cost from 70 to 100 million dollars.

The trustees of the C. S. R'y, also at the same time, namely in 1918, recommended to the government, as an alternative plan, that the plan of the Committee of the railroads be adopted, except that instead of locating the southern part of the belt line in Kentucky, the Front Street connection track be double tracked and be

made the southern link of the belt; that the L. & N. bridge be connected by east and west branches at both ends with existing tracks, and that the C. S. R'y yards in McLean Avenue be enlarged so as to increase their capacity to 2,000 cars a day. This plan also contemplated the double tracking of the C. A. R'y Line and the Intraterminal connection between the C. & O. and C. H. & D. R. R.'s, the vacation of Sixth Street from Front Street to Burns Avenue and the allocation of abutting property to railroad use; also the rebuilding of the present double track C. & O. R. R. bridge and the replacing of the present single track C. S. R'y bridge by a double track bridge proportioned to carry the heaviest trains.

The consideration of these plans was, however, abandoned by the government upon the signing of the armistice.

Recently, the plan of using the canal bed from Lockland to Eggleston Avenue, and Eggleston Avenue from the canal to the river for a four-track railroad electrically operated instead of using it for the Rapid Transit Railway now building has been urged by some prominent business interests. The advantages of such a system of tracks to the industries that are and might hereafter locate along this route are apparent, and these tracks would also serve as an east and west connection between all the railroads as stated by the Cincinnati Belt Railway Company in 1881. The advocates of the revival of this plan for using the canal bed for freight tracks propose to operate these tracks through a terminal company for the equal benefit of all the roads entering the city.

The evident appropriateness of making such a use of the canal bed, however, stimulated our State Legislature when it granted to the city the right to utilize the canal bed, to impose the condition that no railroad tracks should be built therein, and this inhibition would have to be removed by special legislation before this plan could be considered.

The history of the terminal question in Cincinnati discloses a commendable activity in the making of plans, but a paucity of constructive work. The backwardness in development of terminals may, it appears, be ascribed almost solely to the need of a supervising authority, such as a planning commission to bridge the chasm between theory and practice in the solution of our terminal problem.

The one exception in the general lack of adequate terminals is the C. S. R'y. This road has three large freight stations and about

thirty miles of tracks in the city, and its facilities are ample to care for the very heavy traffic which this road handles.

In an effort to solve the passenger terminal problem the Trustees of the C. S. R'y have secured, subject to approval by popular vote, authority to issue twenty million dollars of city bonds to finance the building of a Union Passenger Terminal, and the agreement of the several roads as to its location and the payment of a rental to meet the maintenance, interest and sinking fund charges, and the approval by referendum vote, are the only necessary preliminaries to the construction of said terminal.

Driven by the spur of necessity Cincinnati's railroads have lately made a notable advance in their methods of handling L. C. L. freight. In addition to the natural obstacles offered by the local topography to the interchange business between the roads, the city has by the 'Daylight Ordinance' for nearly a half of a century restricted the use of the Front Street connection track to the night, thus interposing an artificial obstacle to the east and west movement of freight in the city that has been of incalculable damage to her commerce. From the P. R. R. and L. & N. R. R. freight houses at the east end of the river front of the business district, to the down-town stations of the Big Four R. R., B. & O. R. R., Q. & C. R. R. and the C. & O. R. R., is hardly more than a mile. A direct track along Front Street connects all of them; yet the record shows that the average time for a freight car to go between any two of these freight houses is two days and fourteen hours. It was because of these conditions that about forty per cent. of the transfer work of L. C. L. freight has until lately been performed by the Cincinnati Transfer Company with huge three-horse wagons, of which about 120 were used for this purpose; and the balance of the freight, about sixty per cent. was handled in 'trap cars' between these stations and from the substations in outlying industrial sections.

This system was costly in time and money, and promptness was an impossibility.

As a remedy for this condition, Mr. H. A. Worcester of the Big Four R. R., about two and a half years ago, introduced the use of motor trucks with removable bodies for the transfer of L. C. L. freight between local stations, and today all of the railroads in Cincinnati are using this system. The modus operandi is as follows:

The freight cars containing L. C. L. freight are unloaded and the contents, together with outbound package freight delivered by consignors, loaded into the bodies of the motor trucks, which each have a capacity of about four and a half tons, and are handled by overhead electric cranes. When loaded, each car is sealed and way-billed for the freight station to which it is to be taken. Notice that the truck bodies are ready for transfer is telephoned to the motor truck dispatcher in the office of the 'Cincinnati Motor Terminals Company' and his motor trucks promptly proceed to the station, usually bringing an equal number of loaded truck bodies from some other station to be left in place of the loads to be taken away. The body on the incoming truck is lifted off of the truck chassis and the outgoing loaded body is placed on the chassis by the crane in a total time of about five minutes.

The dispatcher through his direct phone lines to each freight station keeps tab upon the goings and comings of the trucks, as well as a complete record of their work, and can quickly meet emergencies of every sort, instantly adjusting the service to the needs that are thrust upon it. The average time to haul one ton of package freight between stations by motor truck is seven minutes, as compared with three hours and fifty-four minutes by trap car.

By the use of motor trucks from thirty to forty per cent. of the floor space of the stations has been released for other use, about 88,000 trap car days a year have been released for other use, and the cost per ton for transfer of L. C. L. freight has been reduced from about \$1.20 per ton to 80 cents per ton.

These motor trucks will handle about 1,000 tons of L. C. L. freight daily, and for this work the equipment will be 15 chassis and about 225 bodies. These trucks are about 17' long and 8' wide and are run at a speed of about ten miles an hour. Their use in place of the horse-drawn lorries moving at a speed of about three miles an hour has resulted in a great reduction of street traffic congestion and has released the station platform trackage formerly occupied by 'trap' cars for line cars.

With this system of motor truck haulage, railroad substations for the collection and delivery of package freight can be established in every industrial section of Cincinnati, thus shortening the haul for individual patrons and so in turn perceptibly lessening the traffic congestion in the city streets.

The introduction of the motor truck system for L. C. L. freight has a direct and important bearing on city planning as regards freight terminals. There remains little or no use for down-town freight terminals except team tracks for car load shipments, and main freight terminals can therefore be located to advantage outside of the business district where land is cheap, and no existing facilities would have to be eliminated.

Another change in the method of handling freight that has been referred to—namely, store door delivery, holds possibilities of seriously affecting terminal plans and therefore city planning. Store door delivery is now looked upon askance by the railroads because their past experience justifies them in the fear that the charges for this service may be included flatly within their transportation rates. It would greatly simplify traffic problems in and around freight terminals, effect large economies, and facilitate the movement of freight for the same reasons that the use of motor truck delivery has improved the conditions of the handling of L. C. L. freight.

In reviewing this record of railway terminals planning one cannot escape the conclusion that, with a directing board to guide us to a goal, much would have been achieved that now remains to be done, and that if our people would give adequate means to our Planning Commission to prepare a city plan, our record in the near future would be in pleasant contrast with the one we find in the annals of the planning of railroad terminals.

#### DISCUSSION

##### E. P. GOODRICH, *New York City:*

Much emphasis should be laid on the desirability of detouring railroads outside of the built-up sections of cities instead of permitting them to operate through the streets or even on private rights-of-way in congested districts. In Newark, for example, there is what is known as the 'Iron Bound District,' an area surrounded on all sides by railroad rights-of-way. It is cramped from every city-planning point of view.

Yesterday you heard of what is being done in Dallas about the removal of one of the railroads, which now operates directly through the main section of the city, by carrying it a considerable distance out around the suburbs and bringing it in at a convenient point

to the central station. The same scheme has been devised for St. Louis. In connection with the construction of the Barge Canal in New York, it was necessary to change the location of the New York Central Railroad, and in several instances it was necessary to remove the freight and passenger stations from the centers of the communities through which the railroad had formerly passed, in some instances putting the railroad on the far side of the canal which itself was put outside the city limits. And in those communities there has been no protest. There has been a marked advantage from every point of view. The removal of grade crossings is an important item, and the economics of the solution is one which rests very largely with the city planner; generally the railroad has to bear a certain proportion of the expense determined by the state law. This sometimes is just; generally it is unjust in its distribution. Sometimes the traffic from the street point of view is paramount compared with that on the railroad, even though the railroad may have a state or even a federal franchise.

City planners should also determine very carefully the thoroughfare connection with terminals. Very often the railroad designs its terminal, and particularly connections with the water terminal system, for its own needs, without any relationship to the city itself. My attention was called only two years ago to a very large undertaking in which several hundred acres of combined water and rail terminals were connected to a large community by only one highway. The traffic which that highway was expected to be called upon to carry had never been thought of by the municipality at all; and the proposition would have been an impossible one. The advent of the motor truck, and its relation to the railroad problem has been interesting.

At a meeting of the American Association of Civil Engineers, the manager of the Erie Railroad reported that there was a serious proposition to abandon the bringing of railroad cars into New York City. Instead of this, freight would be transferred out on the Jersey meadows to automobile trucks which would be brought into New York City to conveniently located local freight stations. By this means, the merchant and the shipper would avoid the necessity of trucking their freight to a congested point along the water front. He went further and said that the railroads were now suggesting the abandonment of many feeder lines because they didn't pay in competition with the motor truck, which could take freight

from the store door or the warehouse of the shipper in a small town and bring it down to a station on the main line. In fact that actual solution of the problem has been successfully carried out down in Kentucky with the Pennsylvania system, where about a twenty-mile haul is effected daily by motor truck line which issues bills of lading on behalf of the railroad, and is in every sense an adjunct and part of it. Some of the larger lines in the east are discussing and considering equipments of motor trucks to pick up freight and bring it from twenty to forty miles to some of the main lines.

One of the best solutions of this problem has been worked out here in Cincinnati, an examination of which yesterday morning delighted me greatly. The interchange of freight between railroads, which had heretofore been carried on by station cars, is now done by motor trucks having detachable cages, as they are called colloquially by the men, each capable of holding from five to ten tons and each capable of being sealed. They are so designed that they may be lifted by an overhead crane from the motor body and set down on the platform; they are designed to be opened close to the floor so that a hand truck can move into the cage easily, and out again. Traffic which is destined for another road is hand-trucked into one of the cages. When the motor truck brings in an empty it is dropped in the vacant space by means of the overhead crane; then the truck backs under the particular cage destined for the return trip, which contains all of the freight to be transferred to the other station. A special committee of railroad operatives has examined this scheme and states its belief in its report that it is a considerable improvement over the station car method. It will congest the streets of the cities to some extent, but it will be a civic and social improvement. We are short of railroad cars today; the scheme will make available something like forty thousand station cars.

The recommendations of the report we are discussing may be advanced in some directions, such, for example, as the unification of all operations within the city limits under a joint control of an operating company, or perhaps under municipal auspices; but the demonstration during the war of consolidated service, even in such small items as in the consolidated ticket offices, and the improvement which has been made in many cases on behalf of the community by the possibility of shipping through every station freight for every road, leads to the conclusion that the committee's recommendations are sound and should be followed by all those who are involved in terminal designing.

**HARLAND BARTHOLOMEW, *St. Louis*:**

The establishment of belt lines in connection with freight terminals may be desirable, but it is apt to bring about a condition that will result in many difficult problems unless the location of the belt lines is handled in connection with zoning and street planning. The belt line encourages the development of industrial property. In fact the belt line usually seeks property that would not naturally develop for residential purposes. You often get, as in Omaha, a district varying in width from four to ten blocks that is practically undeveloped because of the uncertainty of its use, and then before the city gets out to this district, the better residential area jumps beyond and creates a decentralization problem which is rather serious. In St. Louis we have a partial belt line which has produced an extremely low class of housing development in an area of several square miles, because there were not sufficient industries to absorb the entire area about the belt line. Today a proposal for an outer belt line is resulting in the sale of adjacent property for industrial use, and is threatening to disturb many hundred thousands of dollars worth of values in our best residential districts. This area is entirely outside of the city, and we cannot zone it.

Another point mentioned in the report which I would like to see emphasized is the decentralization of freight terminals. It is not well to have the freight centralized in one terminal. Freight stations should be established all over the city in order that the shipper may be able to reach any one of them readily, and no matter what the destination of his freight, whether north, south, east or west, he should be able to deliver it at his nearest freight station.

**Mr. GOODRICH:**

In the City of Brooklyn the terminals are all owned and operated by private corporations, and make two or three daily deliveries to all of the railroads. On Manhattan Island, on the other hand, the terminals are all individually owned by the railroads. Anyone who has given thought and study to the New York City problem is immediately struck by the congestion on Manhattan and the lack of it in Brooklyn; this is probably due, in considerable part, to this difference. In the one case the merchant can ship to the nearest terminal, which connects with all roads; in the other case he must ship to the individual roads. That idea led to the suggestion of the establishment of united terminals by private companies, or

preferably jointly operated united terminals around Manhattan Island to displace the individual terminals which now exist.

**ARTHUR C. COMEY, Cambridge:**

I am surprised that this report does not seem to link up the suburban passenger transportation problem. Now if there is anything that is assured in our cities today it is that they are expanding into the garden suburban type of development; and that means in a city the size of Cincinnati—and there are fifteen or so in the country—or even a city half the size of Cincinnati—and there are thirty-five of those—we have got to have rapid suburban transportation. We cannot throw away the opportunity afforded by all these trunk line railroads; we can transport our suburban passengers over what Mr. Lewis has termed the urban transportation routes.

Now if we have an urban transportation line, such as they are proposing here in Cincinnati—and such as most cities of 500,000 should have—to keep traffic off of the street, we have got to utilize that line twenty-four hours a day. There ought to be a movement of freight over it during the five or six hours that passengers are not using it.

It seems to me that this development of small car subways is a mistaken idea. I think we cannot afford to transfer to little units with expensive special trackage, but have got to use standard units in transporting our loads, and either transfer to motor trucks or run the standard freight cars to the door of the warehouse or factory. That simply means the moving of freight cars on the transit routes and possibly motor trucks also in the night time, for in most places freight service once in twenty-four hours is enough.

Again referring to the suburban passenger problem, I think we may look forward to electrification in all our suburban zones. Passengers are going out daily for many miles. Most of them will not use automobiles, and it doesn't take much of a computation to show that if they did, we couldn't handle them on any street system which has yet been devised. That means using our existing railroad rights-of-way—we cannot afford to duplicate them. Instead of diverting our rail lines around the city we must bring them directly through the city, and not land passengers at one terminal but at numerous stations through the central district. I see no real objection to landing the passengers on trunk lines through the city in the same way; but the total trunk line passenger travel to a city

is a very small fraction of the suburban passenger travel in a city of 500,000 or more, and it could readily be handled by a centrally located passenger terminal which would not consume a large area of land. It might well be put underground as in New York. In any event those people need not be diverted to some outlying point and then be forced, owing to the transportation system, to take some other form of rail transportation, or a taxi going over the city streets. They should be able to use the urban transit lines.

## THE URBAN AUTO PROBLEM

ERNEST P. GOODRICH

*Consulting Engineer, New York City*

The problem of the automobile in the city may be analyzed under two heads;

A. The general problem which is also equally applicable to extra urban conditions.

B. Special urban problems.

The general problem (A) may be classified under

1. That due to the creation of a new instrument.

2. The growth of its use.

3. Its sympathetic exploitation.

All the general factors have applied to each means of transportation as it was evolved and can thus be approached from a historical standpoint with profit. Each new device introduced has first met with opposition.

The growth of every transportation innovation has been slow at first, then extremely rapid for a period, which has been succeeded by a gradual falling off as the market became saturated.

The growth of the automobile industry in the United States as a whole is shown by the following tabulation:

### MOTOR CAR REGISTRATION

1914	1,711,339
1915	2,445,664
1916	3,512,996
1917	4,983,340
1918	6,146,617
1919	7,558,848
1920	8,500,000 estimated

The introduction of each new device has always resulted in stringent legal regulation. In ancient Rome for example,

. . . and probably also in other large towns, it was necessary to restrict traveling in carriages to a few persons of high rank, owing to the narrowness and crowded state of the streets. For the same reason the transport of goods along the streets was forbidden during the ten hours between sunrise and sunset.<sup>1</sup>

<sup>1</sup> Encyclopaedia Britannica, 9th Edition, Vol. V, p. 134.

That the restriction of deliveries during daylight hours is equally modern is exemplified in the suggestion which was carefully considered by the New York City authorities only a few years ago of restricting all deliveries of coal to down-town Manhattan office buildings and of other commodities to a large extent to the night. A restriction was placed upon the use of coaches in London as early as 1635, when a law was passed forbidding the general and promiscuous use of them in London and Westminster, or the suburbs. Down almost to the present time automobiles have been excluded from certain parks and parkways, the Harlem River Speedway having been legally opened to traffic only as late as 1919. Control has from the earliest time been exercised over vehicles by means of licenses.

Vehicles were early restricted as to size and load. The Chicago ordinance limits the maximum load per axle to 24,000 pounds and the maximum load per inch width of tire to 1,000 pounds. The Cleveland and Detroit traffic regulations limit the width of a vehicle to a maximum of eight feet, six inches, and the Boston regulation limits their width to ten feet. That vehicles which do not use tracks are not peculiar in this respect is shown by the common practice of stipulating in franchises granted to street railroads that they shall be of 'standard gauge.'

Street width has grown so as to accommodate wider and wider vehicles (and probably largely because of such growth). The road leading from Naples to Pompeii is generally about fourteen feet wide and it is interesting at this day to measure the ruts worn by the chariot wheels which suddenly ceased operation in 79 A. D. These wheel tracks vary from three feet to three feet, six inches, apart, so that the estimated width of the vehicles themselves must have been about four feet, ten inches.

When Sir Christopher Wren prepared his recommendations for the rebuilding of London after the 'Great Fire' it was recommended that:

The streets . . . be of three magnitudes; the three principal leading straight through the city, and one or two cross streets to be at least 90 feet wide; others 60 feet and lanes about 30 feet, excluding all narrow, dark alleys without thoroughfares and courts. The Exchange to stand free in the middle of a piazza and be as it were the nave or center of the town, from whence the 60-foot streets as so many ways should proceed to all principal

parts of the city; . . . Many streets also to radiate upon the bridge. The streets of the first and second magnitude to be carried on as straight as possible and to center in four or five piazzas.<sup>2</sup>

By 1790 when L'Enfant submitted his recommendations for the plan of Washington the streets were designed with widths from 80 to 120 feet, while the avenues were to have widths varying from 120 to 160 feet.

Vehicle speed has always been limited, a 1669 Albany ordinance stipulating that:

It is Proclaimed y<sup>e</sup> all Persons who enter y<sup>e</sup> Citty with slees (sleighs) and horses, horseback or oyrwise (otherwise), shall not ride faster than foot-tap throughout y<sup>e</sup> streets, upon Penalty of three shillings for each offense.<sup>3</sup>

A modern example of speed regulation is found in the Illinois State Law (1911).

That parking regulations are in no sense modern is proven by the fact that hackney coaches were prohibited from standing in the streets of London as early as 1660, the law requiring them 'to stay in the yards until they may be wanted.'<sup>4</sup> The regulations of the Detroit Police Department include a map showing the streets upon which parking is entirely prohibited and the limits of the district within which a time limit is placed. This limit varies with the street.

The location of the parked vehicle with reference to the curb is also generally stipulated, only parallel parking being permitted according to the Detroit ordinance, although in certain specially designated parking places diagonal parking is permitted in the center of the street. The New York police regulations permit two lines of vehicles along the outer edge of certain streets and along the center line of other streets, while diagonal parking is permitted in other thoroughfares. Infractions of the Detroit rules makes the automobile subject to removal to an automobile pound.<sup>5</sup>

Due to the great growth in street traffic it has been found necessary in modern times to limit it in various ways. One-way streets have proven themselves exceedingly effective and are growing

<sup>2</sup> 'Sir Christopher Wren and His Times' by James Elmes, London, 1852.

<sup>3</sup> Stratton, page 400.

<sup>4</sup> Gillbey, pp. 32-33.

<sup>5</sup> Detroit Ordinance 680-A, Section 9.

rapidly in use in American cities. The Boston ordinance,<sup>6</sup> for example, stipulates that "between the hours of seven o'clock a. m. and six o'clock p. m., Sundays and legal holidays excepted, vehicles shall pass in but one direction in" certain specifically named streets.

Segregation is another device to which resort has been made, the best modern example being that found in the Borough of Manhattan, promulgated by the Police Department under authority of the charter in accordance with which during certain hours of the day commercial vehicles are not permitted to operate on certain streets except to make collections and deliveries while pleasure vehicles are similarly excluded from other thoroughfares.<sup>7</sup>

Private rights-of-way have long been the rule for trunk-line railroads, although the first railroads were built along the public highways in England and many in this country occupy public streets where they pass through communities. Street railroad corporations have generally occupied the public streets, although in some instances, notably in St. Louis, they have acquired more or less extensive private rights-of-way. What is somewhat analogous to the latter practice but in this instance proposed for motors has been suggested in Los Angeles, where a special high-speed motor truck highway has been designed to connect Los Angeles City with its harbor, the idea being that it would be set aside almost exclusively for the use of commercial vehicles operated between the destinations mentioned. Modern practice is leading to the diversion of steam railroads outside the built-up portions of cities through which they were originally permitted and often urged to pass when they were constructed.

In connection with the Lincoln Highway where it passes through Philadelphia, the 1918 Annual Report of the Bureau of Highways<sup>8</sup> of that city remarks that a proposed cut-off will save six miles for all traffic going westward through Philadelphia.

Sympathetic exploitation has taken various directions. Telford (1757-1834) and Macadam (1756-1838) introduced the historical improvements in English highway construction. Practically no improvement had taken place from their day down to the beginning of the present century when better binders were introduced for

<sup>6</sup> City of Boston, Street Traffic Regulations and Rules for Driving, revised to October 1, 1919. Art. 8, Sec. 1.

<sup>7</sup> Circular No. 27, Police Dept., City of New York, August 23, 1918.

<sup>8</sup> Page 52.

macadam roads, largely due to the necessity of protecting the old water-bound macadam against the destructive action of automobile tires.

Largely through commercial initiative, special facilities have been provided as demands arose in the way of road houses, garages and repair shops, while civil authorities have assumed heavy burdens in the way of paving betterments, the widening of thoroughfares, the strengthening of bridges, the enlargement of street intersections, and in a few cases in the elimination of grade crossings. A notable example of the latter variety is seen in the Park Avenue bridge and the viaduct around the Grand Central Station in New York, which created a through thoroughfare of Park Avenue largely to relieve the congested traffic on Fifth Avenue.

Turning now to (B) the special urban problems,—they may be subdivided in character as to whether they apply principally to (1) passenger, or (2) commercial vehicles, and in each instance as to the conditions which surround the vehicles when (a) moving, (b) standing.

As already mentioned, marked progress has been made in improving the surface conditions and the supporting power of pavements, and marked increases in this direction will take place as fast as the pavements are relaid to make them conform to the present ordinance limitations in weight of vehicles. The character of pavement surface has been greatly improved during the past decade, largely to afford more comfort to riders in passenger vehicles, and future progress will doubtless continue in the same direction. These matters interest city planners from the fact that these betterments cost increasing amounts of money and the economics of the problem always limits the careful designer.

Note has been made of the growth in street width which has taken place in the past. This experience evidently points to provision for even greater future accommodations to take care of the present maximum size of vehicles in their greatly augmented future numbers. Before it is possible to determine the proper width of future streets it is necessary to consider present and future operating conditions. Experience derived from traffic counts has shown that one vehicle per foot of width of roadway per minute is the present-day maximum under normal city conditions where intersecting streets occur at short intervals and where traffic is permitted to operate in both directions on main and cross streets, subject only

to normal police control. The creation of one-way streets (which it has been noted is growing rapidly) is believed from careful observation to provide for fully double this unit quantity of travel, while a more radical innovation in street traffic control, it is believed, will add at least another equal increment to the potential traffic of existing streets. This control device may be explained briefly by citing the conditions which would exist were companies of soldiers with considerable intervals between each company to be marched up and down any street. Obviously ample opportunity would exist for those using the cross streets to turn into the thoroughfare through which the soldiers were marching, joining companies marching in either direction as was desired through the gaps between companies and when the gaps coincided at any street intersection, cross traffic could occur without impediment. In order to make the device effective it will probably be necessary to install automatic signals at frequent intervals which will be operated from some central synchronizing station very much as block signals are now automatically operated on the railroads. It may then be stated that by the introduction of improved traffic regulations, existing streets may be employed to at least three times their present capacity and city planners should take this into account in designing the major street systems of old and new communities.

In order to provide for changes of use, the elastic street has been suggested. Thus far the elasticity has been horizontal. There is no reason, however, to preclude vertical elasticity for a further segregation of street use in existing congested districts. Steps in this direction have already been taken in the construction of rapid transit lines upon elevated structures and in subways, thus removing one of the principal elements of street traffic. In a few instances, double-level vehicle streets have been constructed, generally in connection with the erection of viaducts being constructed through a street in a valley, but in such manner as not to preclude a continuation of its use for traffic purposes. Examples of this kind are the Riverside viaduct where it crosses the Manhattan valley in Manhattan and the new Twelfth Street traffic way in Kansas City. More extensive plans for double level streets were designed in connection with the New York Central west side improvement, presented to, but not yet officially approved by the Board of Estimate of New York City, while still more ambitious projects of the same nature have been put forward from time to

time for the creation of a two-level roadway through the full length of West Street as it runs parallel and adjacent to the Hudson River in Manhattan.

Suggestions have also been made for the separation of pedestrian from vehicular travel by the construction of overhead sidewalks. These have been proposed, for example, for installation in the side streets leading from several of the Hudson River ferries up to Broadway, Manhattan, and investigation showed them to be entirely feasible,—in fact, the economics of the case is clearly in their favor. Had it not been for the relatively short distance affected by the Oxford Avenue sidewalk arcade in Philadelphia (costs of condemnation for which amounted to \$23 per square foot) it would have been cheaper to erect an overhead sidewalk in the existing street and widen the roadway beneath the sidewalk to exactly the same dimensions as that finally employed. The inconvenience, however, to pedestrians having to mount the overhead sidewalk in this instance would probably have created insurmountable objections at the time the widening was made. With such overhead structures costing in the vicinity of \$3 per square foot it is evident that such widenings as that of Avery Street in Boston (where the acquisition of real estate cost \$20 per square foot), Livingston Street, Brooklyn (with a \$15 per square foot cost), and Elm Street, New York (with a \$37 cost), an economic limit exists beyond which it is inadvisable to make street widenings or propose wider thoroughfares, double-level streets being considered in lieu thereof.

Experience in urban traffic discloses the fact that the greatest difficulties are encountered at intersections. The Illinois Highway Law, for example, takes account of the fact that vehicles which turn from one street into another must do so at a greatly reduced speed compared with that under which they can operate uniformly along a thoroughfare. This reduced speed involves increased density in accordance with well-known physical laws, which, in the case of traffic, instantly reacts to accentuate congestion. Such separations of grades as have from time to time been suggested at the intersection of Fifth Avenue and Forty-Second Street, New York City, are heroic endeavors to relieve this difficulty. Such projects are evidently feasible only where traffic is extremely heavy so that the cost is warranted. The simplest possible means of somewhat alleviating the difficulty is by minor enlargements of the roadway space at intersections. Work in this direction has been carried

out in various cities, a late modification in New York, for example, changing the ordinance relative to the radius of curvature of the curb at street intersections, enlarging it from six feet to twelve feet. With curves of still larger radius it would be necessary to cut across the corners of corner lots and to shift pedestrian crossing points away from the street lines which are continuations of the regular sidewalk space. A logical extension of this scheme is the establishment of stanchions along considerable sections of the curved part of the curb near the diagonals of the street intersection.

An extension of the scheme in another direction is toward a considerable enlargement of the intersection to such an extent that a monument site or even an area large enough to contain a building is planned in the center of the intersection, traffic being carried around such central space by what has come to be known as 'the rotary traffic scheme.' When the central space becomes large enough for a building site it is generally considered by those who have studied the problem that the advantageous position thus occupied will create values which are more than sufficient to pay for the costs of altering even some congested existing conditions. Were this suggestion to be carried out logically in connection with a street system wherein blocks are only 200 to 300 feet long, the constant twist of the thoroughfare would tend to an unsightly condition and create increased traffic difficulties. Instead of this scheme the logical solution would seem to be a system of streets in pairs with small blocks between the members of each couple (say eighty feet), with larger blocks between the pairs. The traffic of each member of a pair would be in a single direction in each instance with rotary traffic thus produced around each small block. This principle can obviously be applied to advantage only as a substitute for main thoroughfares, the streets in the minor system being carried across the pairs in accordance with the present method.

The practice already initiated and mentioned above of creating cut-off and detour streets for the use of through traffic should be extended, while the introduction of new diagonals where conditions warrant will also result in marked benefit. The so-called diagonal street in Newark designed to closely parallel the Passaic River and connect Market and Broad Streets so as to eliminate much traffic which turns from one street to the other at that intersection was computed would pay interest and maintenance costs and amortize

the whole investment in somewhat less than five years solely from savings in gasoline and tire consumption and wear and tear on vehicles, both automobiles and wagons, and on harness, and in saving of time of drivers and passengers.

A careful study as to the possibilities of the introduction of diagonals connecting traffic centers and the creation of detours for the benefit of through traffic evidently contains great possibilities for future city replanning.

Another possibility of improvement is in the establishment of special, restricted rights-of-way for different classes of vehicles wherever traffic is sufficiently heavy. In connection with the creation of interurban motor transportation, the establishment of freight stations near the centers of distribution like those now established by some trunk lines and by interurban electric roads is a natural next step. Leading to such automobile freight stations should be established special rights-of-way extending some distance toward the city confines. A similar segregation of travel may eventually be found necessary to accommodate motor bus lines.

The suggestion may also be submitted of a further elimination of street railroad tracks from city streets, better to accommodate other varieties of street travel. The great congestion which is being developed on Fifth Avenue in New York City, due to the large increase in motor buses, points to a similar need with respect to this type of conveyance, a limitation being placed upon the number of buses which may be operated in connection with general traffic. While motor buses are much more elastic than are street cars (restricted as are the latter to permanent rail lines), and while buses also possess many public advantages, it cannot be admitted that they should be permitted to increase to an unlimited extent.

The suggestion has already been presented before previous national conferences that main thoroughfares should be designed in threes, one primarily for passenger transportation, the second primarily for commercial use, while the third is for miscellaneous traffic. The extension of this suggestion to include the substitution for the last type of street, of thoroughfares in pairs is only a minor modification.

Turning to the problems involved by standing vehicles, the first which logically presents itself is that in connection with vehicles which are waiting to make a turn at street intersections. Practice as to this item differs in various cities. In some instances waiting

vehicles occupy the center line of the street while in some others (whether the latter area is occupied by railroad tracks or not) waiting vehicles are required to stand next to the righthand curb, parking being prohibited in the district thus involved with the point in view of accommodating such vehicles as are desirous of making a turn. With this idea in mind and also in many instances to provide for safety zones for street-car passengers waiting to board cars, the roadways have been widened. In all cases thus far encountered this widening has resulted simply in a narrowing of the sidewalk. This narrowing is obviously a disadvantage, since it occurs where pedestrian street traffic is generally most congested. To obviate it, street designs should be made with street lines set back at the corners.

The parking of vehicles is probably the most pressing question now before urban authorities in connection with automobile traffic problems. This question involves the whole theory of the use of streets. The laws as to street use have generally been interpreted as meaning that streets are set aside primarily for traffic.

Residence streets are almost exclusively used by and for the owners of the adjacent property. Generally the original street opening and construction and in many instances repavings (at least in part) have been directly assessed on abutting property. Under such circumstances the use of the street for the parking of vehicles belonging to residents or those who visit them takes place on property which, while it belongs to the public in general, has been paid for and is devoted almost exclusively to the use of adjacent property owners.

On heavy traffic, business streets, on the other hand, the rights of the general travelling public are obviously paramount, and the rights involved in parking vehicles along them are not as clear. In many instances ordinances have been passed permitting property owners or the police to establish zones in which all parking is prohibited. A vehicle owner who drives into the mercantile district with the desire of spending a greater or less amount of time visiting shops or offices can in few instances park his car immediately in front of the latter because of the great number who desire to do so. Under such circumstances the car is occupying space primarily for the driver's own convenience and generally only in a minute sense to the advantage of the adjacent property owner. A marked tendency now exists toward doing away with this privilege, almost every

city having passed ordinances limiting the time of such parking and in many cases precluding it entirely even when the vehicles are constantly accompanied by a driver who can move them to accommodate traffic needs.

Clubs have established parking accommodations on adjacent private property for the use of club members. Railroad stations have provided space for waiting taxicabs on their grounds, sometimes on the surface as in connection with the Lehigh Valley Station in Buffalo, or below the surface as is the case at the Pennsylvania and New York Central stations in New York; while one department store in New York is reported to be contemplating the acquisition of private property where its patrons can leave their cars after discharge of passengers at the store entrance and from which the cars can be called by a system of electric signals like those so widely used by theaters and opera houses. The Waldorf in New York City constructed a private street (which is largely used by standing vehicles) for the accommodation of its patrons, and a few New York theaters have followed the same course.

This seems to be the only logical solution of this problem, and a prophecy is hazarded that eventually no vehicles will be permitted to park except directly in front of property owned by those occupying the car or with whom they desire to do business, and then only for very short periods, depending upon the traffic needs of the streets in question.

In some instances municipalities have arranged for the parking of vehicles on publicly owned land as is the case in Cleveland, or upon large street spaces in the form of plazas as in Detroit. This seems a use of public property for private benefit in contravention of the spirit of the law, and is to be discouraged.

Just as accommodations have been provided for passenger vehicles, so a similar tendency seems to exist with reference to those used for commercial purposes. The Wanamaker store in New York, for example, has provided loading space within its building where its vans and delivery wagons load, and unload and practically all modern railroad freight stations are being designed similarly. In many instances a two-level arrangement is employed, railroad cars being on an upper level, and vehicles loading and unloading or waiting to do so are assigned space immediately below, at street grade. Such is the arrangement of the new freight station in Chicago, and this scheme can and should be adopted for interurban trolley or automobile freight stations as well.

These several studies point to the following conclusions with reference to the planning of cities in their relation to the automobile problem:

- (1) Street traffic will increase greatly in amount and probably also in size and weight of vehicle.
- (2) Regulations will always largely control traffic matters, and cities should be designed with this idea in mind.
- (3) Streets should be designed with heavier pavements than at present.
- (4) The elastic principle should be applied to the determination of the width of all thoroughfares, but streets wider than those now contemplated can be secured most economically by the use of several levels and the segregation of different kinds of travel upon them, so that street-car traffic may be carried in subways or on elevated structures and provision be made for overhead sidewalks and similar features.
- (5) Special traffic studies should be made to determine the most advantageous location for cut-offs and detours (radial and circumferential streets) and whenever found economically feasible they should be introduced into existing systems and as far as possible planned for any future developments.
- (6) In connection with the handling of freight by automobile truck, private rights-of-way should be arranged by the trucking interests to reach freight stations located near the centers of distribution.
- (7) In connection with such special rights-of-way, and in other places where traffic conditions warrant, separation of grades at crossings is to be considered.
- (8) Of all intersections, studies should be made of the economical possibilities of enlargement by cutting off building corners and providing setbacks of the building line for a considerable distance on each side of each corner in order to provide reservoir standing space for street traffic.
- (9) These setbacks and cut-offs should be accompanied by setbacks of the curb and a considerable enlargement of the curb radius at the corners.
- (10) Where considerable enlargements are deemed necessary, consideration should be given to the possibility of introducing features at the centers of intersections around which traffic should be carried by the rotary principle.

(11) In cases of extremely heavy traffic, consideration should be given to the introduction of pairs of one-way streets in lieu of extra wide thoroughfares, space between the pairs being devoted to the usual real estate use.

(12) The scheme of designing streets in threes should always be considered for those destined to carry heavy traffic, so that surface street railroads, commercial vehicles and other traffic may be cared for respectively.

(13) In general, parking space should not be provided to any great extent in city plans, such parking space in connection with railroad stations (both freight and passenger), theaters, hotels and even department stores and commercial buildings being arranged on private property.

#### DISCUSSION

AMOS SCHAEFFER, *New York City*:

Mr. Goodrich has raised several questions which, for a number of years, have caused considerable anxiety to the officials of the Borough of Manhattan, New York City. There are two phases of the question which appeal particularly to me, namely:

- I. The relation of design between auto trucks and roadways.
- II. Traffic:

- (a) Its regulation.
- (b) Space for its development.

The need of designing pavements to carry heavier and larger loads has been pointed out. Highway engineers are gradually beginning to recognize this need, and are designing new roads and pavements to meet these new requirements. The problem of keeping the design of the roadway and the auto truck properly balanced, however, is not entirely that of the highway engineer; it is also that of the automotive engineer. The highway engineer may be slow at times to recognize the need of highways of greater capacity; he is unable, on the other hand, to adapt existing pavements to the rapidly increasing demands made upon them by heavier and larger trucks. A properly and well-built road will last at least ten years. During the same time, the auto truck may have doubled or tripled in weight and size. It would be manifestly extravagant to attempt to rebuild these roads to keep pace with the development of the auto truck, yet the automotive engineer

takes the attitude that it is the duty of the highway engineer to keep pace with his development of the truck.

As an example of this, the controversy between the automobile interests and engineers as to the width of the roadways necessary in the proposed vehicular tunnel under the Hudson River, between New York and New Jersey, is a case in point. The engineers propose a roadway twenty (20) feet in width, for two lines of traffic in the same direction. Although this is one foot more per line of traffic than has been considered necessary in the past, the automobile interests advocate a still wider roadway to accommodate the constantly increasing width of the auto truck. All interests would be served better if a width were fixed beyond which the builders of trucks might not go. In fact, laws and ordinances are in effect in many places governing the weight and dimensions of vehicles.

Mr. Goodrich has pointed out that the art and science of constructing highways has been the study of mankind for thousands of years, while the development of the auto truck has been a matter of decades. Highways are financed by public funds; auto trucks by private. The procuring and expenditure of public money is much less elastic than that of private money, on account of the many restrictions and checks which the law usually imposes. It is partly for this reason also that highways do not keep pace with the demands which are made upon them.

Instead of accepting the idea of the automotive engineer that only the sky limits him in the development of the auto truck, and that it is the duty of the highway engineer to supply the roads upon which to run them, it has occurred to me that the interests of the public would be served better if those responsible for these two phases of the auto transportation problem could agree upon a method of procedure for their harmonious development, and there appears to be no better forum for this purpose than that of the National Conference on City Planning.

The handling of traffic in New York City has been a serious problem for many years. The designers of the street system in 1807 believed that the greatest movement of traffic would be across the Island of Manhattan between the Hudson and the East Rivers, and they laid out the street system accordingly. The streets running east and west between the two rivers are close together, and those running north and south are far apart and, consequently,

few in number. It has developed that the greatest movement of traffic is north and south and not east and west, and, as a result, there has been congestion of north and south-bound traffic for a number of years on some of these thoroughfares. This increase on Fifth Avenue at Forty-second Street has been 100 per cent. in ten years.

About ten years ago the need of more space for traffic on Fifth Avenue, and several other streets, was recognized, and this was accomplished by removing those parts of buildings which encroached upon the public highways, and by widening the roadway by a reduction in the width of the sidewalk. This widening of the roadway from 40 feet to 55 feet provided space for two additional lines of traffic, or six altogether. During rush hours there are actually six lines of vehicles moving, none being allowed to stand at the curb.

Since this widening of the roadway, further relief has been necessary to permit the free and rapid movement of traffic. This additional relief has been provided in two ways: (a) by the regulation of traffic, and (b) by providing additional space.

The earliest attempts at regulating traffic were made by stationing policemen at the most congested intersections. Later, they were required at all intersections during rush hours, and more recently it was found that still further improvement in the movement of traffic was necessary. The regulation of traffic at each intersection, in accordance with its requirements, caused a spasmodic movement generally, because the cross-town traffic at some streets is much greater than at others and, consequently, causes a damming up of the north and south-bound traffic at these points, which makes the congestion very intense.

Mr. Goodrich suggests a movement of traffic to relieve congestion, which he compares to a military organization on the march, where the distance between the company or battalion formation is considerable. He proposes to take advantage of these open spaces for the movement of the east and west traffic. The Police Department of New York has recently put into operation, as an experiment, a method of regulating traffic which embodies those principles to some extent. The traffic is regulated from five (5) towers which are located in the center of Fifth Avenue, at street intersections from Thirty-fourth Street to Fifty-seventh Street. The traffic at Forty-second Street being the densest, the tower at this

intersection is used as the master tower from which all the others are operated. The towers consist of steel framed supports, on top of which is a small enclosure. Each tower is equipped with three lights—red, green, and yellow—which can be seen from the streets in all directions. The lights are operated by two men in each tower. The red light requires all traffic to stop. The yellow light is the signal for north-bound and south-bound traffic to move, and the green for east-bound and west-bound. The red light is flashed after the movement of both north-bound and south-bound, and east-bound and west-bound traffic. This requires all traffic to stop at the near crossing, and it is held on until all traffic has moved off the crossing, after which the light is flashed for the movement of traffic in the other direction. The yellow light is held for a period of a minute and a half to two minutes, permitting north- and south-bound traffic to move, after which the green light is flashed for a period of thirty seconds to one minute. The other towers, both to the north and to the south, take their signals from the master-tower and flash their lights at the same time. All north- and south-bound traffic, therefore, moves simultaneously, and since there is no interruption by east and west-bound traffic, a speed of twenty miles an hour is sometimes attained. In fact, speeding up is encouraged. The light at Thirty-fourth Street being visible as far south as Fourteenth Street, all the traffic officers to this point take their signals from it, so that the system is actually in use from Fourteenth Street to Fifty-seventh Street. To enforce obedience to the signals, one or more officers are stationed at each street intersection. It is not uncommon for an automobile to pass over this entire line in twelve to fifteen minutes, while under the former regulations it frequently took thirty minutes, and sometimes as much as forty-five. An automobile is held up about seven times in this distance to let east- and west-bound traffic move.

The greatest obstruction to this, in fact, to all methods of regulation is the left-hand turn. All cars intending to move to the left out of the line of traffic must stop in the center of the roadway, between the lines of north-bound and south-bound traffic, which is thereby obstructed, or they must move out to the right into the intersecting street and wait until the east- and west-bound traffic moves.

The experiment has been successful beyond hope, and a permanent installation of the system is under consideration. The towers,

of course, are an obstruction, and should be removed. It has been suggested that a tower be suspended from a bracket at Forty-second Street, and that signal lights be installed at every street intersection, alternating on opposite sides of the avenue, and that they be all operated electrically from the master tower at Forty-second Street. This would insure better control, more positive operation, and would relieve the men now occupied in all the other towers. The Police Department reports that it is possible to train the drivers of cars to observe the signals, but that the pedestrians are hopeless.

The restriction of many streets to one-way traffic in the most congested part of the city has been successful. It has been applied, also, to at least one north and south avenue.

The segregation of light and heavy traffic to certain streets has also helped in the solution of the problem. It is believed that additional relief in the immediate future, at least, must be looked for in the regulation of traffic rather than in providing more space. There is a limit to the additional space which may be made available within the present street lines, and even that can only be obtained at great expense, while the laying out of additional thoroughfares through the highly developed sections of the city is beyond contemplation.

As an illustration of providing additional spaces for the movement of traffic, the recent improvements on Park Avenue at Thirty-fourth Street and at Forty-second Street may be cited. Ever since the Harlem Railroad placed its tracks in a tunnel in Park Avenue many years ago—which is now used by surface cars—there has been a roadway only on the west side of the avenue between Thirty-second Street and Thirty-fourth Street, which accommodated both north-bound and south-bound traffic. The southerly portal to the tunnel is at the south side of Thirty-fourth Street. Fourth Avenue is 100 feet wide to Thirty-second Street; north of this point it is called Park Avenue, and is 140 feet wide. The junction of this 100 foot avenue with the 140 foot avenue was therefore constricted to a width of roadway of 34 feet. Early in April, a year ago, both the roadway on the east side of Park Avenue between Thirty-second Street and Thirty-fourth Street, and the viaduct from Fortieth Street to Forty-fifth Street, around the westerly side of the Grand Central Station, were opened to traffic. The least width of roadway on the viaduct is 35 feet; at the turns

it is considerably more. This is sufficient width to accommodate four lines of vehicles, two north-bound and two south-bound. The construction of these two improvements represents an outlay on the part of the city of \$1,200,000. To further improve traffic conditions at Forty-fifth Street, and to open Depew Place, the roadway around the easterly side of the Grand Central Station, which experience has shown to be absolutely necessary, will involve a further expenditure of about three quarters of a million dollars, making the total cost of the improvement about \$2,000,000. While the relief to traffic has been substantial, the cost also has been great.

Some idea of the effect these improvements have on traffic may be had from traffic observations made before and after they were opened. A count was made in April, a year ago, a few days before these additional roadways were opened, at several points which it was believed would be affected. A second count was made last October at the same points. The following table shows the aggregate number of vehicles which passed the different points during a period of eleven hours on each day:

			<i>Decrease —</i>
	<i>April</i>	<i>October</i>	<i>Increase +</i>
5th Av. at 42d St. . . . .	18,617	17,782	-4½%
Madison Av., 41st to 42d Sts. . . . .	9,849	7,710	-21%
Park Avenue Viaduct . . . . .	.....	13,086	.....
34th St., 5th to Madison Av. . . . .	4,182	4,105	.....
34th St., Madison to Park Av. . . . .	1,886	5,728	+200%
Park Av., 34th to 35th Sts. . . . .	5,365	14,376	+170%

These figures show some phenomenal changes. The reduction of four and one-half per cent. in the traffic on Fifth Avenue at Forty-second Street is not substantial. The reduction of twenty-one per cent. on Madison Avenue between Forty-first Street and Forty-second Street is material, and may be accounted for by the fact that there is more delay in crossing Forty-second Street at Madison Avenue than at Fifth Avenue, on account of a more complicated movement of surface cars. The development of a traffic of 13,000 vehicles on the Park Avenue viaduct between April and October is phenomenal, as is also the increase on Thirty-fourth Street between Madison Avenue and Park Avenue, and on Park Avenue.

The small reduction of traffic on Fifth Avenue, in view of the very large increase on Park Avenue, may be accounted for by the

fact that there is a large normal increase in traffic and also that considerable traffic may have been attracted to Park Avenue from other avenues where no count of traffic was taken. The one fact that is clearly established is that the Park Avenue improvements were warranted.

The intensity of traffic at these points is also worthy of note. The author states that experience shows that one vehicle per foot width of roadway per minute is the maximum under normal control where traffic also moves on intersecting streets.

No intensity of traffic of this magnitude has been observed on New York streets, although it is believed that it will be reached before long. I believe that the number of lines of vehicles which a roadway accommodates represents a more accurate measure of intensity of traffic than the foot width of roadway. For example, if nine feet be assumed to be the width of roadway necessary for the free movement of one line of vehicles, a roadway forty feet wide would accommodate only four lines of vehicles or no more than one thirty-six feet wide, and consequently would not have a greater capacity; yet on the foot width basis, it would show a greater capacity. The following table shows the intensity of traffic during the hour of maximum traffic at the several points of observation and also the difference between the foot width of roadway unit basis and the line of vehicle unit basis:

Location	Time	Total No. Vehicles	Width of Roadway	No. Vehicles per Foot Width of Roadway per Minute	No. of Lines of Vehicles	No. of Vehicles per Line per Minute
5th Av. at 42d St.	5-6 p. m.	2,230	55 ft.	.68	6	6.2
Madison Av., 41st-42d Sts.	5-6 p. m.	980	45 ft.	.36	5	3.3
Madison Av., 42d-43d Sts.	5-6 p. m.	925	54 ft.	.29	6	2.6
Park Avenue Viaduct	5-6 p. m.	2,098	36 ft.	.97	4	8.8
34th St., Madison-Park Avs.	5-6 p. m.	815	40 ft.	.34	4	3.4
Park Av., 34th-35th Sts.	5-6 p. m.	1,950	54 ft.	.60	6	5.4

The nearest approach to one vehicle per foot width of roadway is .97 on the Park Avenue viaduct, as shown in the table, but there is no interference with traffic from Fortieth Street to Forty-fifth Street. Fifth Avenue at Forty-second Street shows an intensity of .68, which is the next highest. Under the present block system of regulating traffic on Fifth Avenue, there is also uninterrupted movement of traffic for periods of time ranging from a minute and

a half to two minutes, during which no cross-town traffic is permitted to move.

It will be noted that the traffic on Thirty-fourth Street between Madison Avenue and Park Avenue shows less intensity relatively on the foot width basis than on the 'line of vehicles' basis, although actually it is just as great, because no greater number of vehicles can pass a given point than if the roadway were only thirty-six feet wide.

The New York-New Jersey vehicular tunnel, which has already been referred to, and upon which construction is about to begin, presents a very serious traffic problem. The present plans provide for the construction of two circular tunnels, each with one twenty-foot roadway intended to accommodate two lines of vehicles in the same direction. The automobile interests insist that a two line tunnel would immediately be used to its full capacity, and that therefore a three line tunnel should be built. Little or no thought, apparently, has been given by these interests to the question of traffic congestion on the public streets in the immediate vicinity of the entrances and exits to these tunnels, or if there has, it is probably assumed that it is someone's else business to take care of it.

The daily capacity of the tunnel is estimated to be 46,400 vehicles. The traffic observations made on the streets of New York show that the hourly maximum traffic is about fifteen per cent. of the daily average. If this percentage be applied to the tunnel traffic, the hourly maximum would be about 7,000 vehicles. There are but three principal thoroughfares at the New York end of the tunnel, with a combined capacity of fifteen lines of vehicles, which are convenient for the handling of this traffic, namely, Canal Street, Varick Street and Hudson Street. Let it be assumed that the tunnel will be used to its full capacity in ten years after its completion, or in 1934. If it be assumed, also, that the normal city traffic on these thoroughfares increases seventy per cent. during this period, which is only one-half of the rate of increase in the vicinity of Fifth Avenue and Forty-second Street, the hourly maximum will be about 1,700 vehicles, which, added to the 7,000 tunnel vehicles, will make a total of 8,700 vehicles per hour. This will give an intensity of 9.8 vehicles per line, which is more than fifty per cent. greater than the present intensity on Fifth Avenue at Forty-second Street, where the traffic is all light and fast moving. It is also greater than the present estimated capacity of roadways where traffic is interrupted by that on cross streets. Should the

tunnel be used to its maximum capacity sooner, this traffic situation would also arise sooner.

The locations of the Hudson River ferries on the New York side are scattered from Cortlandt Street to Forty-second Street, and on the New Jersey side from Jersey City to West New York, north of Hoboken. The capacity of the tunnel is very much greater than the present traffic over all the ferries. It is not conceivable, therefore, that all the traffic which the tunnel can accommodate would find its location at Canal Street, New York, or at twelfth Street, Jersey City, convenient. Even if more tunnel capacity should be needed in the near future, it is obvious from both these reasons that it should be supplied at some other location, and a tunnel to accommodate more than two lines of vehicles should not be built at the present proposed location.

The parking of automobiles in New York City is becoming a very serious problem. There is very little space which may be assigned to the use of the public for parking automobiles. Automobiles may be left at the curb for considerable periods of time, except in the most congested sections of the city. This privilege is frequently very much abused. People having places of business in the city who live outside of the city drive into town and leave their cars at the curb in front of their places of business until they are through with their day's work. Recently, a young lady whose home is out on Long Island, drove her car into Brooklyn and left it at the curb not far from Borough Hall, where it remained all day. During the early evening it was removed to the incumbrance yard by the authorities. About ten o'clock, the owner of the car, being unable to find it, was told that it had been taken to the incumbrance yard. When questioned as to the reason why her car had been left so long, she explained that she had an errand in Philadelphia and drove to Brooklyn in her car, where she left it, and took the subway to the Pennsylvania station, where she took a train for Philadelphia. Of course, she expected to find her car, on her return, where she had left it. The need of parking space is seriously felt by department stores, hotels and theatres, whose patrons at present have to travel several blocks before they can find space where they may leave their cars, even if they are attended.

In the produce district, in the lower part of the city, merchants for many years have been in the habit of maintaining loading platforms in front of their places of business. In some cases trucks are

backed across the sidewalks against these platforms, and in others, a temporary bridge is thrown across the sidewalk, for the purpose of loading and unloading produce. During this time pedestrians are compelled either to pass around the trucks or climb over the loading platform. Some of these obstructions are being gradually removed, particularly near subway entrances, to make way for the rapidly increasing pedestrian traffic. Merchants and manufacturers are beginning to recognize the fact that the public highways cannot be occupied much longer for this private use and are gradually providing these facilities on their own property. The time is not far off when this use of the streets must be given up.

Many problems have been here presented which should have the immediate serious consideration of city planners and engineers. Before they can be fully realized and solved satisfactorily, it is believed that the various interests concerned must be brought together to study them.

**HARLAND BARTHOLOMEW, *St. Louis:***

With respect to Mr. Goodrich's first conclusion that "Street traffic will increase greatly in amount and probably also in size and width of vehicle," our street traffic is bound to increase in volume, but I believe that the tendency will not be to increase in size and width of vehicle. Mr. Goodrich refers to a regulation that was enacted both in Cleveland and Detroit in 1916 limiting the width of vehicles to eight and one-half feet. You may also remember that Mr. Lewis in a paper read at the Cleveland Conference reported a tendency toward standardization of the size of the truck and a reduction of its carrying capacity. Since 1916 the tendency has been toward trucks of one, two and one-half and five-ton capacity, but I believe that it will be necessary for most cities to adopt regulations limiting not merely the size but the weight of motor trucks. I think that it was reported at a city-planning conference that the pavement on Seventh Avenue, New York City, although almost new, and laid on a very heavy foundation, was practically destroyed by the iron tires of trailers of large capacity used in hauling the dirt from the excavation for the Broadway Subway.

Our particular problem in St. Louis has been that we have always paved or repaved streets entirely by assessments, and we have come to the point now where property owners just won't stand for repavements on the main streets, where the pavement has been worn out, not by the traffic originating at their homes, but by the

through traffic. We have made for the first time a departure in our procedure providing in our forthcoming bond issue an item amounting to about three hundred and fifty thousand dollars, which is the city's share of repavements on main travelled streets.

I agree with Mr. Goodrich's second and third conclusion, but think that he might have qualified the latter by saying, that instead of building heavier foundations for pavements, we should devise a major street plan designed for heavier pavements. The extra cost of such pavements would be more than compensated by the saving on paving the minor streets which constitute seventy-five per cent. of the city's mileage.

The mention of the 'Elastic principle' brings to my mind again the question of a major street plan. We do not have to apply the elastic principle to minor or residential streets except in some cases, and in many cases to have our dwellings at such considerable distances apart would involve perhaps a great waste of land.

Mr. Goodrich's point number 5 that "Special traffic studies should be made to determine the most advantageous location for cut-offs and detours" is illustrated in several cities. The splendid radial system of Detroit concentrates everything at City Hall, and there is an almost unbearable congestion of traffic. The traffic originating in the north and wishing to go to the east or west comes down and enters into the traffic of the business district and then it has to proceed outward from that point. The Dix-High-Waterloo road is a cross-town thoroughfare about half a mile north of the business district which will lead directly to the new Michigan Central Station and will permit a considerable volume of traffic going to that point and to the east and west industrial districts, to avoid traffic in the central business area.

Another very interesting case is in East St. Louis, a city of only about sixty or seventy thousand population, where they closed their one diagonal street which leads directly to the Eads Bridge across the Mississippi River to St. Louis, and gave up their one opportunity for through routings to the outlying section of the city. All their traffic was turned off on to a sixty-foot street; because that street had developed as a business street, and they didn't appreciate the necessity or the desirability of keeping the diagonal street open primarily because the trolley cars had never attempted to use it. They are now forced to open that street which has only been closed for three years, because everybody has

realized it is the only solution of the transit problem, and this will have to be done at a cost of several thousand dollars.

The next conclusion I should like to mention is Number 10, "Where considerable enlargements are deemed necessary, consideration should be given to the possibility of introducing features at the centers of intersections around which traffic should be carried by the rotary principle." We have had a number of instances of that in St. Louis. There are two phases that I would like to mention, that is, if the rotary traffic scheme is to be put in, in the first place it should be centered at the street intersection and not to one side, and second, if the rotary traffic scheme is possible at all, it should be large in radius, probably nothing less than an outer radius of 100 to 150 feet in order actually to get a rotary effect; otherwise it will be so small that any considerable volume of traffic will interfere with itself.

I believe with Mr. Goodrich, that in cases of extremely heavy traffic, pairs of one-way streets should be introduced in lieu of extra wide thoroughfares, but I do not understand why Mr. Goodrich suggested such a narrow strip of real estate between these parallel streets. It seems to me, while it might offer the advantage of two entrances it would create an island which in itself would not be a successful feature. I should prefer to have this strip the width of an ordinary block. Certainly a system of one-way streets will be one solution of traffic congestion in business centers. Where one-way streets are created, it is only fair for the property in the district that they should be created in pairs, so that one street will not have an advantage over another.

The problem of the automobile is two-fold; first that within the congested business section, and it is this particular phase of the problem with which Mr. Goodrich has been dealing very largely. But it is equally important to avoid the congested conditions in cities in which they have not yet developed. Widening of streets in congested business districts entails a great expense and is one of the strongest arguments for the avoidance of such conditions, first through the development of a major street plan and second through the development of a zoning plan and more especially in limiting the height of buildings in business districts. I cannot lay too much emphasis on this point. We should decentralize, spread our values over a larger area and automatically by this distribution of business and traffic solve the traffic problem.

**NOULAN CAUCHON, *Ottawa, Canada:***

A special committee on the subject of traffic in Ottawa has unanimously adopted the project of removing the cross-town tracks of the Grand Trunk Railway. In the main business portion of the city these tracks extend one and one-quarter miles as an absolute barrier, with practically only one outlet, and their removal will make possible the opening of cross-streets not only in the central portion of the city, but for the eight miles to which the city extends.

I am urging that the city should preserve the railway right-of-way which is 100 feet wide as a through route for rapid transit not for electric cars only, but for automobile access to the city. One proposition has been that the streets be opened across this right-of-way and that the intervening portions should be sold as lots, but I am advocating a rapid transit boulevard so that the driver of an automobile can go from the heart of the city at the same rate as in the country.

**FRANK L. RASCHIG, *Cincinnati:***

Cincinnati has at this time a committee of city officials and representatives from various business men's clubs framing an ordinance to regulate traffic conditions within the city.

Recently this committee made a trip to six cities in the east to study conditions, and it is now holding weekly and bi-weekly sessions formulating such an ordinance; this paper will be of very great interest and value to the members of this committee.

Mr. Goodrich mentioned elevating the sidewalks. I cannot agree with him that this is a good thing; I do not believe any elevated structure in the street in the business portion of the city is a good thing, especially where on the old curb line you will have columns. The columns of any structure are a detriment to traffic and will cause congestion. Furthermore, there would be some trouble for the people to climb to the elevated structure. I really believe that arcading of the stores and buildings, and then widening the street up to the old property line would be a better solution.

As to parking, I fully agree with Mr. Goodrich that in certain districts of the city no parking should be permitted; and it is a question whether in the business district the automobile should have the right to park anywhere; the streets are for moving vehicles, and not for stationary vehicles to camp out for any length of time. Of course it is going to create some hardship; there may have to

be some very delicate handling of the situation before we can perfect the proposition and prohibit parking entirely in the downtown district. It is possible, perhaps, that some system of zoning may be worked out, where in certain districts there will be no parking at all, in certain other districts parking for a limited space of time, say fifteen to twenty minutes, and then another district, further away from the central district, where parking will be permitted for a much longer time. Such an ordinance is in effect in Philadelphia and is working very nicely. Private interests must provide parking places for their patrons, especially places for loading and unloading trucks by commercial concerns. We have a condition on Race Street at Pogue's store, right in the heart of the congested district where a long line of wagons and trucks is backed up to the curb extending practically to the middle of the street.

I believe that loads of commercial vehicles should be limited and that the width of tires should be regulated so that the weight is spread over a large area. We are now increasing in Cincinnati the thickness of our concrete base for pavements; originally we had six"; we are now making it seven," and in some places eight" to provide for heavier traffic and are also using a heavier material for paving.

**CHARLES H. CHENEY, *Portland, Oregon:***

I would like to ask Mr. Goodrich how many cities have adopted one-way traffic streets, and how many cities have excluded all parking down-town.

**MR. GOODRICH:**

As to one-way streets I could probably name a score of cities in which a greater or less number of streets have been designated as one-way streets. Philadelphia and Boston have carried this plan farthest, although New York is rapidly catching up.

Absolute exclusion of parking has not occurred in very many cities except on special blocks which correspond with the narrow one-way street blocks. Large areas in which parking is forbidden are rare. In some cases much the same thing is secured by providing that no vehicle may be parked unless the driver is in or near the car in a position to move it as traffic demands.

**B. A. HALDEMAN, *Harrisburg, Pa.:***

Philadelphia for several years has established one-way traffic on practically every north and south street between the Delaware River and Sixteenth Street, for about two or three blocks north and south of Market Street. The streets are practically all fifty feet in width, and with the exception of Second Street are occupied by street railway tracks, and the traffic is required to go through those streets in the direction of the street car travel. Chestnut Street and Walnut Street and parts of other streets, particularly those south of Market Street are one-way streets. Chestnut Street is sixty feet wide with a twenty-six-foot roadway, and is occupied by a single track railway, and is the high-class shopping street of Philadelphia. It is a one-way street; and traffic is permitted to park only upon one side of that street in the direction of traffic of course; and upon most of the other of those streets, traffic is permitted to park only on one side of the street. Traffic is not permitted to park at any time upon Broad Street from Spruce Street, I think, three squares south of Market, to Race Street, three squares north of Market; no parking at all during the day. And there are other portions of important streets in the center of the city where no parking is permitted during the busy hours of the day.

In respect to the limitation of weights and size of motor trucks and other vehicles, Pennsylvania, at the last session of the legislature, passed an act which limited the size of vehicles and the weights. I think the maximum length allowed is twenty-eight feet; the maximum width over-all is 90 inches; the maximum weight is 26,000 pounds; and the maximum load is 700 pounds per inch of tire width. There are other regulations as to trailers, but I do not recall those.

I believe that all the states should agree on a standard width for tires so that we might have a general law on the subject. My own opinion is that ninety inches is not too narrow.

**JOHN NOLEN, *Cambridge, Mass.:***

There are two points that I think need emphasis. One is the opportunity to exercise ingenuity in using the city plans and the city-planning idea which we have inherited from a variety of causes in different cities for the solution of the problems in other

cities. For instance, Sacramento has a system of alley ways running through the entire city with blocks of unusual depth, so that the alley is of unusual length. In some cases the alley has been widened into a minor street and good opportunities have resulted for parking. The same opportunity is found in cities through the Mississippi Valley on wide streets with planning strips where a portion of the planning strip has been utilized for parking. Another application of a simple device is found in connection with the planning of new park areas. It is really the elastic principle again as in Niagara Falls, where a new common was laid out, not with the idea that it would be sliced as Boston Common must probably be, but with the definite recognition from the beginning in the design that the whole central area might be made available on certain occasions for developing parts at least of the common for parking and utilizing the same area at other times for children's playgrounds.

The other point is that those who are doing city planning in the smaller cities realize again and again that most of these emergency methods and drastic methods are quite unnecessary if they can wake up the smaller city to the need of good planning now, and especially the need of provision for adequate street widths and open spaces. There are many small cities running from 5,000 to 100,000, where there need be no serious automobile problem such as will require the methods already described, if only they will recognize the need of open spaces, proper placing of public buildings in connection with open spaces and especially the distribution of population within a reasonable area.

ANDREW WRIGHT CRAWFORD, *Philadelphia, Pa.:*

In Pennsylvania we have had a fifty million dollar loan for the construction of state roads, none of which is available for the big cities. The reason appears to be that both the smaller borough and the city district are utterly unable to pay for through traffic streets, and therefore, the entire loan must be spent outside of the cities. The state also gets an annual income of very close to \$7,000,-000 from automobile licenses, and not one cent of that is available for the maintenance of streets in cities. I believe that there are two or three principles that should be definitely fixed. In the first place, a state issue of bonds should not run for a longer period than the life of the improvement for which the loan is made. In the second place, I think that we ought to increase the license fees of auto-

mobiles, and that the money so raised should be distributed not only outside the cities, but inside the cities. In Philadelphia the ordinary Ford car pays a fee of only ten dollars a year. If we could get more money from motors of all kinds and then effect some kind of an equitable distribution of this income in the districts through which the main traffic routes go, the result would be much more just. I agree that it is unfair as in St. Louis to compel people whose property fronts on the through route, to pay the cost of maintaining that route. It should be a fundamental rule that the motor traffic should pay the cost of maintaining traffic routes.

**A. Z. HOFFMAN, Philadelphia, Pa.:**

In Philadelphia we are able to assess only the cost of the original paving against the property owners. The general taxes must pay for all subsequent repaving even if it is complete restoration of the paving.

We have just written into the new charter a rather stringent provision which provides that we cannot create bond issues for anything other than permanent improvements; and we have a definition of permanent improvements which precludes the use of loan funds for repaving.

In order that the city may not spend too much money in the original paving of any street, we have devised a method of paving only as wide a cartway as we think meets the present needs. In Philadelphia we plan many years ahead; we plan arterial highways which we think will be wide enough probably for fifty years in the future, and portions of those highways only are opened at a time. If we think that a portion of a hundred-foot-wide street which may have a sixty-foot-wide cartway planned for it is not going to reach the ultimate use from traffic to the extent of that sixty-foot-wide cartway, we have provided the legal machinery by which we can temporarily reduce the width of the cartway to be paved. That decreases the original cost of paving, it decreases the maintenance charge which is saddled on to the community for years to come; and when the ultimate need for that sixty-foot-wide cartway is reached, the city can then increase the paving, or the width of the paving, and assess the increased width against the property owners. That is the so-called elastic street principle which Mr. Goodrich mentioned.

## A MEMBER FROM OHIO:

The law passed in Ohio last year is radically different from the Philadelphia Law, in that the automobile pays not only a license fee, but an additional tax of one and one-half per cent. of its value. This law has another feature that is new. It provides that one-half of the amount raised by license fees shall be sent back to the city in which the automobile is owned to be spent exclusively for maintaining of improved streets. It cannot be used on unimproved streets, nor can it be used to rebuild a street. The other half goes to the state to be used exclusively for the maintenance of the main thoroughfares. At present the small towns are unable to keep up that part of the main thoroughfare that passes through their limits, nor do the big cities keep up the streets in the outlying sections. I believe that if the state funds, spoken of above, could be used exclusively for taking care of the main roads which pass through small cities and through the outlying sections of large cities, the Ohio Law would be about perfect.

CHARLES H. CHENEY, *Portland, Oregon*:

California has tried an experiment quite successfully. It has returned half the license fee to each county in which the automobile is owned. San Francisco, having a city and county government, has been getting over a hundred thousand dollars a year for the last six or eight years, which has all been applied on the main highways.

The last legislature in Oregon added a one-cent gasoline tax on all gasoline sold, the revenue from which was to be applied to new highways. This tax, together with the state bond issue, is producing about \$20,000,000 this year for the construction of new highways. However, we have the same trouble in both states about getting the proper roads in cities where the abutting property can't properly be assessed for the cost of the highway. In Berkeley, California, we have induced the County Government to pay for one twenty-foot strip of roadway across the city out of the state fund; the abutting property owners paid another twenty-foot strip, and the car line company paid for a third strip in the center. In this way we have a main line thoroughfare paid for by three groups.

GEORGE H. NORTON, *Buffalo*:

One word about the elastic street. I think you will find that on your minor business streets which do not carry a pavement of

maximum width that you are allowing large buildings to extend their vaults across to the curb line. We found this to be so in Buffalo, and it makes an expensive obstacle in the way of widening pavements.

As to the effect of heavy trucking on pavements, the damage done by the truck is because of the speed rather than the weight. In Buffalo we have carried weights of twenty-five to forty tons over ordinary pavements on horse-drawn vehicles with no material damage, but if you put ten tons on the steel-tired vehicle hauled by a motor, and haul it at ten or fifteen miles an hour, it will destroy any pavement.

## TRUNK HIGHWAYS AND CITY THOROUGHFARES

NELSON P. LEWIS

*New York City*

It appears to have become a well-established custom that at some time during the course of our annual Conferences on City Planning there should be an address by the President. Happily there is no law, written or unwritten, which requires this to be an official utterance or a keynote speech, as is the custom in political conventions. The President has been allowed much latitude in the selection of his subject and the right to do so will be assumed by the present incumbent. This leaves him free to discuss a topic which does not appear elsewhere on the program or to select one which may lead up to or supplement one of those which have been or are to be presented.

I propose to devote the time at my disposal to a subject somewhat closely allied to that set down for the session when the report of the Committee on Regional Planning will be presented, but with no intention of encroaching upon the field assigned to that Committee.

Briefly stated, the problem I have in mind is that of Trunk Highways and City Thoroughfares. By trunk highways are meant the state roads which are certain to be to some extent interurban highways, beginning, ending in, passing directly through or skirting the edges of populous districts, or any 'main traveled' roads connecting more or less important centers of population. By city thoroughfares are meant the traffic arteries of an urban district, more particularly those leading into or out of the town or connecting its residential, commercial, administrative or industrial centers. The need of some orderly system of city streets is universally recognized. The advantages of streets of generous width radiating from important centers, connecting them directly with each other, and of some circumferential thoroughfares which will permit traffic to by-pass congested centers are so obvious as to require no argument. They are admirably illustrated in the plan of Paris. Rural highways were formerly improved with little or no effort to create a system which would reach every part of the state or connect with the trunk lines of other states. The par-

ticular roads to be straightened, widened and improved were commonly selected for political reasons, to add to the prestige and popularity of those upon whom the selection devolved, or to serve personal interests. It may have been that an effort was made to distribute the improved roads in accordance with some plan, thought to be fair and even intelligent, which would take into account the road mileage, population and assessed valuation of each county. Such method may have been honest, but its intelligence may be doubted as it failed to consider the question of where people would actually want to go and which routes would serve the greatest number and result through their improvement in the greatest economy of time and cost of transportation.

However much of study may have been given the problem of the city street system or of the interurban road system, it must be admitted that they have never received proper consideration in their relation to each other. It would not be rash to say that few of those present have escaped the annoyance of floundering about in perplexity while trying to find the best exit from a city to the good roads known to exist in an adjoining district, or the most direct road to some other town, or who have not experienced a like uncertainty in approaching an important town.

Were it not for the excellent work done by touring clubs and automobile associations in the erection of signs along the most frequented roads, the difficulties and delays would be far greater than they actually are. But why, we may ask, should not these direct routes for those to whom time is most important, or the attractive roads for those whose object is pleasure riding, be rendered more obvious by the width and general character of their improvement? Why should they not be as easily found as the way to the reading room of a library or the ticket offices and train platforms of a great railway station?

Vehicles using public highways are either for pleasure or commercial use. The latter are employed chiefly in cities, but their use is rapidly being extended into rural districts. Directness of route and avoidance of delays are of the utmost importance to them and greatly affect their earning capacity. In the case of pleasure vehicles, their chief aim is to get out of or through the city streets with their traffic congestion, and when they are obliged to pass through large towns they wish to do so as quickly as possible, or preferably to go around them.

That there is a lack of co-ordination of rural and urban highways is quite apparent, and the responsibility must be shared by the authorities in control of them. The planning done by the towns stops abruptly at the city line and frequently fails to take account of the fact that old established roads leading to centers of population, which are rapidly increasing in importance, will be the routes sought by many of those passing what may now be the city line and that these roads will carry a far greater traffic than will many city streets laid out at a greater width.

In selecting the roads for improvement by the state or rural district we often see this same indifference to conditions on the other side of the city or county line. The trouble is due in great measure to the large number of small administrative units and the lack of some central authority which can compel co-operation. This condition has been even more conspicuous in Great Britain than in this country. It was said in 1913 that within fifteen miles of Charing Cross there were ninety local road authorities acting independently of each other, and that a main road in twenty miles might pass through territory controlled by ten different highway authorities. The British Town Planning Act of 1909, the creation of the Road Board, and, quite recently, of the Road and Transport Ministry with its broad powers relative to the acquisition of property for the widening of roads and the financing of road improvements, have made it possible to correct some of these conditions.

In order that we may avoid discussion of this subject in a theoretical manner, will you not accompany me on a day's motor trip from a home in a residential district of one of our large cities, out into the country, through several towns of from 25,000 to 75,000 population and a number of villages, and back to our starting point. While we will call this an imaginary journey, its incidents will be by no means unusual, and will be such as have undoubtedly been experienced by many of those in this room. Our driver does not know all of the roads we expect to follow, but has a general knowledge of the town from which we start and a good sense of direction. We have, however, a blue book of the district within which our day's ride is to be limited. We are obliged to pass through the main business part of our home city in order to reach the exit we desire on its farther side. As we start the traffic generally is moving in our direction, and we have little to do but follow it, and we

make very good time for the first twenty minutes. The traffic is now growing denser and we wonder if we would not do better if we took another street rather than follow what we know to be the most direct route. We try it, but get in a bad jam of street cars and motor trucks and decide to go back to our direct route where the traffic, while dense, is of one kind. Some new police regulations are apparently in force and, when we reach the point where we should turn to the left to reach the main road we had planned to take, we find that a left-hand turn is no longer permitted. It being thought unwise to argue with the traffic policeman, we keep on and decide to take another road leading out of the city and then cross by a road we remember beyond the city line which will bring us to the route we intended to take. We pass the city boundary and soon find the road we had in mind, but there is a sign 'Road Closed—Under Construction.' We go on, and several miles beyond see a road bearing to the left, smooth and well shaded, and so inviting that we take it. We are soon conscious that it is bearing too much to the left and that we seem to be going back to the city we have left. In a few minutes we see a road roller ahead and find that our road, not as shady and smooth as when we first discovered it, ends at the road under construction we read about a while ago. We turn back and take up again the road we left, and conclude that it is useless to try and pick up the route we first had in mind, and will go on until we come to the town of 'G,' which we hear has had a spectacular growth as a result of the extensive war industries carried on there. In ten miles we come to a cross-road with a single track trolley and a sign indicating that 'G' is only three miles to the right. We have forgotten our blue book until this moment and, on consulting it, find on the route from 'R' to 'G,' at 18.4 miles, this note: "Four corners, straight through, following trolley, right-hand road to 'B' (that is our home town). We are also told that at 21.2 miles we will turn left on Main Street, 'G.' Of course we follow the blue book and the sign. The trolley soon becomes double track. We turn with it to the left and then right and pass between rows of factory buildings. The town certainly has grown. We join a line of touring cars and trucks and move slowly between trolley cars and curb,—just enough space for one line of vehicles. Everything stops, owing to a dense stream of traffic on a cross street just ahead. We actually wait three and a half minutes, but it seems much longer. We

debate whether to turn off this street and follow the one whose traffic has delayed us. No, we think the town is narrower this way and we have seen enough and want to get out and so we stick to our road. Glad we did, as the traffic soon becomes less dense, and ahead on the right we see a group of attractive cottages arranged with sufficient irregularity to make them interesting, and fronting on well-improved streets where trees and shrubbery are getting a good start. Here is an excellent example of a modern industrial residential district. Too bad we haven't time to make a closer inspection, but we remember that we are behind our schedule and must move on.

Ten miles more and a well-surfaced road crosses ours and, on consulting the blue book, it appears this must be the direct road from 'B' (our home town) to 'H.' We had planned to return through 'H' and back home by this road, so we will take it, though in the opposite direction to what we had intended. We know that 'H' has built a new town hall and has created a very dignified civic center, and also boasts of a good hotel, so we will stop and see the civic center and try the hotel. Twenty miles over a good road and we see what are evidently the outskirts of the town, but the street system is somewhat confused. We turn to the blue book and find that "at the end of the road with church on right, we should turn left and take the next right and 0.6 mile further bear right on Broad Street." We do so and, turning into Broad Street, we see the group of buildings we have been looking for. They are well placed and are certainly a credit to the town, but our impression would have been much better had the main road from 'B' to 'H' led us into the other end of Broad Street, which justifies its name, is treated with parking spaces, and forms an excellent approach to the civic center. We have our luncheon, and, following directions given us as to several right and left turns, find ourselves on the road to 'C,' passing through several attractive one-street towns, well shaded and lined with very comfortable looking homes.

'C' itself is a very busy place with narrow streets, devoid of interest. A by-pass could readily be provided which would take us around the business center. One short connection of 100 yards between existing streets would do it, saving the time of those following this route and relieving the narrow business streets of the town of traffic which brings them nothing and which they do not

want. We find here no exception to the rule so generally prevailing that the roads through the cities and incorporated towns are in relatively bad condition, while those in the open country are excellent.

Just beyond 'C' we come to a railroad grade crossing, where several freight cars block our passage while the engine is doing some drilling along the track. It must be a difficult piece of work, judging by the time it takes, but it is finally finished, the train is again made up and moves on, and we may proceed. We have already crossed some half dozen tracks at grade, but this is the first at which we were delayed.

We turned homeward and, while the road is generally good, we pass through several towns where our route is not well defined, and there are several offsets through rather busy streets. Twice we fail to take the correct turn and have to ask our way in order to get back again. In several places the traffic is so dense that we have waits of some minutes. We are approaching the boundary of our home city and we wonder why this old historic road we are following, when it was so nicely paved, was not widened in order to accommodate the traffic which is constantly increasing as we approach the city.

We wonder, too, why the city boulevard we expect to follow almost to the center of the town was not laid out to connect with this old highway which was a main line of traffic long before this part of the city was developed or even thought of. It is two blocks away, however, and we reach it through one of the cross streets which are dusty and torn up as the result of building operations, while in one of them a sewer is being built. Another forty minutes of city travel and we are back where we started from in the morning.

We have had a moderate run of 150 miles and have been gone over nine hours, one and one-half hours of which were spent at 'H' looking over the civic center and getting luncheon, and another hour was consumed in getting back on our road after going wrong, in traffic blocks and at an obstructed railroad crossing.

This might be called a typical motoring day, with no mishaps, but as we think it over we wonder if it could not have been made a little more comfortable and restful. First there was that long ride through the city traffic. We wanted to get out of the town and into the country, but were constantly mixed up with local

traffic, shoppers and short distance riders. Could not such through and local vehicular traffic be separated? It could scarcely be done by police regulations, and existing streets could not be given over exclusively to through traffic, as that would render the abutting property almost useless for business purposes.

A paper on the street system of New York, written by the speaker in January, 1917, after describing several improvements then in progress which would increase the capacity of the north and south streets on Manhattan Island, proceeded as follows:

“What other remedies can be suggested that will not involve so great an expense as to be almost prohibitive? Is it not possible to provide further relief in some manner which will not involve the taking of expensive property and the destruction of costly buildings? A very large number of vehicles using the city streets represent through traffic, their object being to traverse the congested portions of the city as quickly as possible in order to reach the roads north of the city, those on Long Island or such drives as Riverside Drive, Ocean Parkway and the Shore Road of Brooklyn. If this traffic could be segregated and provided with one or more thoroughfares along which it could move at good speed, the other streets could readily accommodate the local traffic.

“The capacity of a roadway along which vehicles can move without obstruction by standing traffic and that crossing the line of movement at intersecting streets is enormous. The city already has along most of the west side of Manhattan below Seventy-second Street a marginal street, the purpose of which is to provide ready access to the commercial water front and permit the convenient handling of freight.

“The construction over this marginal way of an elevated viaduct, say, fifty feet in width, with occasional ramps leading to it from the intersecting streets, would interfere very little, if at all, with the use for which the marginal street was designed. Such a viaduct could readily be carried over the yard of the New York Central Railroad above Fifty-ninth Street to the southerly end of Riverside Drive at Seventy-second Street. It would undoubtedly be used quite generally by the large number of motor vehicles, the destination of which is outside the city, and the users of which would like to reach that destination in the shortest possible time.

"Such viaducts could be provided at a cost far less than would be involved in the creation of new streets through expensively developed property, and the relief to the other north and south street would be enormous."

Of course, such a remedy may be required only in the largest cities, but in most towns of considerable size there are places where the provision of a direct route for through vehicular traffic would be a boon to the local as well as the long distance riders.

The next thing that we recall unpleasantly is what appears to be the hit or miss fashion in which the streets of the larger towns connect or fail to connect with the trunk highways traversing the rural districts. What is the reason? Is it stupidity or perversity on the part of city, county or state authorities or all of them? No, they recognize that mistakes have been made through lack of vision on the part of municipal authorities who failed to anticipate the growth of their cities, that county and state authorities have not appreciated the importance of the trunk highways as inter-urban routes, destined to be called upon to accommodate continually increasing traffic, both pleasure and commercial. Those now in control are staggered by the magnitude of the problem of correcting the mistakes which are apparent. They realize that when the creation of a state road between 'B' and 'H' was decided upon, it should have led to the foot of Broad Street at the outskirts of the town instead of connecting with some back street, which would give the visitor anything but a favorable impression of the town, but there probably was someone who had influence enough to secure the selection of a route passing by his house. We appreciate now the need of city planning authorities vested with power to prevent in the future such blunders as have been made in developing the plans of our cities. But when we talk about planning it is fatal to have our units too small. We must not think in such limited dimensions. We must have state planning authorities, clothed with powers to enforce co-operation between all the different authorities within the state, and, if such co-operation is not willingly rendered, they should have the power to take matters into their own hands and prepare and execute suitable plans.

Again we remember that in a number of the towns through which we passed, the section of road within the town was in bad condition while that up to and beyond its corporate limits was nearly perfect. The state could reasonably be expected to bear

a certain portion of the expense of the improvement of the roadways through these towns, which are necessarily wider than are the rural highways, but it is not likely to do so until the town is prepared to improve the remaining width, and waiting for this to come about may involve a delay of years in the realization of the benefit which would result from the complete improvement of the road, the annoyance and expense of reducing speed and load to adapt them to the bad condition of the road within the town or a detour around it, if one is available. Such a detour, where a road is under construction or repair, is accepted philosophically as it holds out a promise of better conditions in the near future, but when due to the deliberate unwillingness of the town to put its part of the road in as good condition as the adjoining rural sections, it gives rise to some unkind thoughts and words as to the indifference and backwardness of the community responsible for such conditions. And yet there is often much to be said in extenuation of the attitude of the town or small city which does not promptly undertake its share of the work. It may be a community where real estate values are low, where there are few, if any, industries contributing to the traffic which uses the road and few who would use it for pleasure, where there are no natural attractions to induce the tourist to stop, where there is not even an inn which one would be tempted to do other than avoid.

The taxpayers of such a town think it unjust, and not unnaturally, that they should be called upon to provide a good road for what to them appears to be alien traffic, leaving nothing in its wake but a cloud of dust or a smell of gasoline, while the mothers of the place are in dread lest their children be run down by the tourist who too often rushes through with scant regard for the safety of pedestrians or for any law of God or man.

It would seem as though the power to carry out such improvement at the time other sections of the road are improved should be vested in the state, which would become responsible for payment for the work in the first instance, and that the town should contribute such share as may be designated by law with the right of appeal to some high judicial body which would have the power either to decrease or increase the proportion fixed by statute, the decision in each case to be reached after careful consideration of all the circumstances, including population, the assessed value of real estate in the town, its existing debt and tax budget in relation

thereto, the amount of traffic originating in the town, the need of other improvements, the width of its streets in proportion to their traffic and perhaps other factors which would be essential to a fair determination of the issue.

We cannot but wonder if the delays experienced in passing through some of the towns could not be avoided to the mutual advantage of the riders and the community itself. A detour involving a couple of miles of added distance would be gratefully accepted as an alternative by the tourist. Our road systems have been developed under the assumption that the highest ambition of those using them is to pass through as many towns as possible and to go through the most active business centers of those towns, whereas the average rider would doubtless prefer to go around as many of them as possible. Where we prefer to, or must go through them, there are some awkward offsets we would like to avoid. The speaker recalls one instance where a town of 30,000 people, traversed by one of the most frequented state roads, has applied an effective remedy to an awkward condition. Where the state road crosses the chief business street of this town there has always been an offset of 200 feet along this main street, resulting in much delay and confusion. The town has created a rectangular crossing by building a roadway under a row of business buildings and establishing an easy connection with the section of the state road to the north, avoiding two right angle turns with their inevitable traffic congestion. Many instances of such impediments to travel might be noted with suggestions of an easy and inexpensive remedy, provided that remedy is applied now. If it is put off too long, new buildings are likely to be erected which will make it so costly that the town will be unwilling to undertake it.

Another unpleasant memory of our day's trip is the number of railroad crossings at grade. It is true we were delayed at but one, but there might have been delay or worse at any one of them. The railroad grade crossing must be eliminated, but the task is a great one, involving large expense, and must be carried out gradually.

The railroad is something upon which depend the growth and prosperity of town and country, but its utilitarian character does not justify a disregard of appearance in the structures necessary to separate the grades of railroad and highway. Where the highway is carried over the railroad, little besides its roadway, sidewalks and the protecting railings will be seen, and capacity and

safety are the chief considerations. Where the railroad is carried over the highway the appearance of the structure is more important. It need not be given a monumental character; its practical purpose can be frankly recognized, but the erection of a few steel columns and girders with wooden cross-ties separated by open spaces—in other words a structure which will simply get the tracks across the road and permit traffic to pass under them,—should not be tolerated.

One more suggestion: It is generally admitted that parkways or boulevards connecting a series of parks should be so treated that one following them would know he was going from one park to another and would not be likely to find himself lost in a maze of business streets or those serving an industrial district. So in the case of rural or interurban roads, why should not the trunk line highways be given some unmistakable characteristics,—a certain treatment of the roadway, a type of culvert or guard rail, milestones and signs of uniform design,—so that one would know at a glance that he is on a county, state or national highway, one that would take him somewhere, and that would lead into the main street of the next town or to one of the principal traffic arteries of an important city?

## REPORT ON REGIONAL PLANNING

PREPARED BY

B. ANTRIM HALDEMAN

*For the Committee on Regional Planning*

It is only natural that those who have followed, or seriously attempted to follow the city planning movement of the past dozen years should come to feel that the problems involved cannot be fully solved by any scheme of organization of the city alone, but that there must be a broader application of the theories and practices of planning if its purposes are to be accomplished with a maximum of benefit to the general public welfare. Out of this feeling there has developed, during more recent years, more or less definite suggestions of the possibilities of constructive progress in the broader fields of 'rural-planning' and 'regional planning,' and thus we find that what was characterized a few years ago as the 'city beautiful' movement has widened to embrace the constructive ambitions and enterprises of nations and states as well as towns and cities.

There no longer seems to be any serious doubt in the minds of those concerned in or responsible for the administration of public affairs as to the wisdom of trying to look a reasonable distance into the future or of the importance and value of planning in advance, or preparing a scheme of preparedness, to meet the needs of that future so far as those needs can reasonably be foreseen. The world moves so fast, material progress is so rapid, and the interests involved are so great, that order and system as represented by well conceived and carefully worked out policies and plans must supersede the thoughtless and almost reckless practices that have prevailed in the past if the problems of the future are to be successfully solved.

The need for planning in the broader fields has been revealed by the experience gained in the narrower and more limited fields, for regional planning has been a natural outgrowth from city planning and like the latter has already reached the stage where it is not so much a question of whether a plan is needed as it is of the ways and means of obtaining the legislation, organizations and

financial support necessary to prepare and establish the plans and provide a reasonable assurance of their being carried into effect.

Much of the thought and energy put into city planning has been given to the preparation of more or less elaborate plans for the reorganization and reconstruction of built-up areas and too little has been given to the problems of city extension. Greater success and larger general benefits would have accrued if greater activity had been shown in planning for the systematic and orderly development of the regions adjacent and tributary to the rapidly growing centres of populations.

The city has never been a thoroughly satisfactory unit for planning. The opportunity for really effective work has been limited by arbitrary boundaries within which urban development has usually progressed so far that revisions and changes, no matter how desirable or even necessary they may be, involve much reconstruction and such heavy expense that accomplishment is necessarily slow and uncertain even where improvements are vigorously undertaken. In the meantime urban development is being extended beyond the city boundaries with little or no intelligent planning or control of the public service facilities which form the basic elements of a city or regional plan, and the same difficult and costly problems of reorganization and reconstruction are being reproduced.

City planning has been too largely a study of purely city problems and has ignored to too great an extent the problems of broader significance which involve national and state interests. Much thought has been given to the details of local projects while those of nation-wide and state-wide importance which are at the same time essential to the progress and prosperity of the city have been neglected. Problems of transportation, circulation and public service cannot be satisfactorily solved by any amount of planning for a single unit detached from all similar units, but the relationship, common interests and associations of even widely separated units must be considered if really efficient and constructive planning is to be accomplished. No city can be properly planned without first having determined, as accurately as may be possible, the character, importance and extent of its needs for contact with the world beyond its boundaries.

Progress and accomplishment in planning new areas both within and beyond the city boundaries has been obstructed to a consid-

erable extent by the absence of authority or of an orderly or efficient program for the making and legal establishment of plans, as in most communities the power to legally establish and protect plans for any considerable period in advance of physical improvement is quite limited.

The nearest approach that has yet been made to the exercise of regional planning authority has been made by city planning commissions, which under the laws of some of the states are given more or less jurisdiction over areas lying within certain fixed distances of the city boundaries. In Pennsylvania no subdivision of lots within three miles of the city boundaries can be recorded or obtain any public service facilities until the plan has been approved by the city planning commission. This apparently gives the commission much power to control the layout and extension of the street system, but there appears to be some doubt as to the constitutionality of the grant of this power inasmuch as it constitutes extra-territorial jurisdiction and may infringe certain rights of neighboring municipalities where no city planning commission exists.

Three things are essential in the establishment of a regional area for planning purposes: first, the enactment of laws authorizing the preparation and official establishment of plans; second, the financial support necessary to maintain the organization engaged in the work, and third, an organization having sufficient practical skill and ability and technical knowledge to make the necessary investigations, studies, surveys and plans with authority to legally establish and protect the plans until the projects they represent can be carried to completion.

One of the principal difficulties in the way of carrying out city planning projects is the absence of sufficient authority to legally establish and protect plans which have been developed after thorough and careful consideration of the needs of a community and, on account of the lack of such authority, a great amount of labor and money has been wasted and many very admirable plans have gotten no further than the files or the waste basket. A similar fate probably awaits any regional plan made without adequate authority to make it an official document and maintain its integrity. One of the best planning reports of a regional nature yet produced, that of the Boston Metropolitan Planning Commission of 1909, failed to accomplish anything of a definite nature by reason of the lack of any official recognition.

The attempts made in some of the states to accomplish regional planning to a limited extent by extending the jurisdiction of city planning commissions a certain fixed distance beyond the city boundaries have not met with a very large measure of success, as the commissions have not generally been able to exercise any real authority, and in most cases have not even been able to obtain the co-operation of the municipalities within the area of their jurisdiction. It is evident from the experience of these commissions that if regional planning is to be effectively accomplished the planning organization must be armed with some real authority and the co-operation of all the governmental units in the regional area must be assured either voluntarily or by mandatory legislation.

It may be possible to obtain voluntary co-operation through the exercise of tact and patience, but it is doubtful whether this method would work successfully in a regional area embracing a large number of governmental units. The establishment by legislation of regional areas under the control of planning organizations vested with sufficient authority to make and establish regional plans seems possible and would undoubtedly be more certain to obtain the desired results. A commission appointed by authority of an act of the Pennsylvania legislature to consider the desirability of amending or revising the state constitution suggests in its preliminary draft of a revised constitution a section providing for the creation of incorporated districts extending over more than one municipality and having exclusive power or power concurrent with the municipalities within their boundaries to facilitate public works. This is to meet a long standing demand in the state for what is virtually regional planning power in promoting public works where the interests of two or more municipalities are involved.

Pennsylvania is perhaps a little in advance of other states in city planning legislation having passed an act at the last session of the legislature creating a bureau to promote comprehensive planning throughout the state and to either make or secure or assist in making or securing the necessary surveys and plans. Similar legislation in other states would undoubtedly mean a long forward step toward city and regional planning accomplishment.

In considering the subject of regional planning some understanding should be arrived at as to its meaning and scope and the classes of public and private development which should be

subject to regional determination and control. The meaning and scope of city planning has been interpreted, by some authors at least, to embrace virtually every activity that contributes to city growth. Regional planning may, and should, have narrower limitations in order that there may be less possibility of conflict with local authorities over matters of minor importance and it should not, in any event, undertake to assume any control of matters of purely intra-city concern. It is important also that there should be some general agreement as to what should constitute a region for planning purposes and whether, and how, regions shall be classified.

#### MEANING AND SCOPE

Regional planning can be assumed to contemplate the determination and control of only those schemes of physical and constructive development which, in the fulfillment of their functions, render public or private service which is nation-wide or state-wide or which involves two or more governmental units in its usefulness and value and which contributes to the economic development of all the resources of a wide area.

The problems involved in such planning are generally identical although they may vary in magnitude and importance. They would include main and secondary thoroughfares, rail and water transportation and terminals, public service utilities, drainage and stream control and water supply, sanitation, parks and forest reserves and other public lands, and, to a greater or lesser extent, the use of land and the conservation of natural resources.

A regional plan would, of necessity, be little more than a tentative scheme for the systematic and orderly development of the resources and public works of the territory covered by it, since the coincident carrying out of all the projects contemplated by it would not be possible and it would require revision from time to time to meet new conditions which are certain to arise in any community where active and ambitious enterprise exists.

If, in regional planning, purely local problems are to be ignored, as they should be, the conception of its scope should not be limited but should include national and state planning, or an evolution from regional to national planning may almost immediately become as pertinent as has the evolution from city to regional planning. Since it will require state, and probably national, legislation

to make regional planning effective its scope should include the broader fields of planning enterprise and, assuming that this will be the case, the determination of appropriate areas as units for regional planning purposes becomes important.

#### REGIONAL AREAS

It is apparent that a regional area should not be so large that it cannot be economically planned and administered by a comparatively small organization. Regional planning will necessarily be a continuing process and the field of its most active operations will be in the areas tributary to large centers of population. These centres will in some cases, lie in close proximity while in others they will be widely separated. A regional area should normally include all the territory that receives the principal impulses of its development from the city which forms its centre and from the chief regional activity. The undeveloped or partly developed territory intervening between the regional areas will be very large; too large and too unimportant as a planning unit to be specially organized for that purpose, yet it would require some consideration of its affiliations with the important centres, and unless some scheme for planning it were devised under national or state jurisdiction it would become a no man's land of regional planning.

A regional area will usually comprise a group of municipalities forming the satellites of a city of more or less importance and having different forms of local government but all owing their existence to some dominating activity of the region which will also exercise a large influence upon the scheme of planning. This dominating activity may be any one of many forms of industry or trade, but whatever it may be the entire zone of its active influence should be embraced within a single regional area for planning purposes unless it should be too far-reaching and diversified for proper administration as a single unit.

The most striking illustration of an area that might be too large and diversified is New York and the territory within its zone of influence. Where large areas are incorporated into a single municipal unit, however, as is the case with New York, Philadelphia and Chicago, they should be regarded as regional areas within themselves. In such areas the problems which would ordinarily be functions of regional planning are so vast and complicated that each calls for the attention of specialists in its solution.

## WORKING ORGANIZATIONS

To make regional planning effective, working organizations would have to be created and provided with the authority necessary to enable them to perform their functions through national, state and municipal legislation, making co-operation mandatory where there was an overlapping of public interests and making it possible to establish and execute plans involving divided authority.

There should be created in some department of the national government an organization with authority to prepare regional plans for works of national importance and to co-operate with the various states in the preparation of plans for similar works in which there may be both a national and state interest, such as there naturally is in the creation of a system of national highways, in the organization and control of nation-wide transportation service and in the development of a national park and forest reserve system; also in the matter of the conservation of natural resources.

There should also be in some department of each state government an organization with authority to co-operate with the national organization and with the various municipalities of the state in the preparation and establishment of plans of state-wide importance covering matters similar to those referred to as of national importance. The work of the state organization should be assisted and supplemented by that of the regional organization which would also be a medium of co-operation between the state and municipal organizations.

With a thoroughly organized system of national, state and regional plans, the plans for local development could be left to the control of the local governments. The national organization should have power to act as referee and arbitrator wherever there might be disputes between states in matters of inter-state importance and the state organization should have similar power in adjusting disputes over regional or inter-city problems.

The financial support of these organizations, their co-operation, and the making of plans, should be mandatory upon the respective national, state and municipal governments.

The setting up of national and regional organizations would probably be more difficult to obtain than state or municipal organizations. Most cities have sufficient authority in their various executive departments to do the necessary local planning, but co-operation and the will to do is lacking. It might be compara-

tively easy to set up the necessary organization in some of the states which have developed considerable sympathy with the city planning movement.

The regional planning organization would possibly be the most difficult one to create by legislation, although it is, in some respects, the most important, and the only one which might necessarily have to be of a commission form and at least partly non-technical in its personnel.

All the working organizations except the regional ones should be of a technical character and attached to an executive department. Regional organization should work under a commission which should be representative of the entire regional area and appointed by the chief executive of the state.

The national, state and municipal working organizations should have power to officially establish the plans for areas under their separate jurisdictions and to enforce compliance with them through boards of control appointed by the chief executive of the respective governmental unit and so constituted that continuing policies may be established and maintained; the regional organization should exercise similar power through a board of control appointed by the chief executive of the state and composed of representatives of the state board of control and the boards of the municipalities directly affected. Where the regional area under one regional planning organization includes a considerable number of governmental units there might be several boards of control, each including a certain number of units. This would enable each unit to be represented without making any board too large to function smoothly and would probably avoid dissatisfaction by keeping local matters under local control.

The state board of control should have power to act as arbitrator and to settle disputes which might arise between local boards or between them and the regional planning organization.

#### FINANCIAL SUPPORT

National, state and municipal organizations should be financed by the respective governmental units under which they perform their functions, and the expenditures of the regional organization should either be borne by the state or apportioned among the governmental units included in the regional area upon the basis of the value of property in each for purposes of taxation.

It may be that the state would be fully justified in assuming this expense inasmuch as the work of the regional organization would be closely akin to that of the state organization, covering only such problems of development as were common with both and not interfering with problems of purely local interest.

The apportionment of the expenses would be a somewhat complicated expedient which might require special legislation involving changes in the schemes of taxation of some of the states and therefore perhaps impossible of accomplishment. In some states it might be possible to give the planning organization a limited power of mandamus, but the granting of such power can scarcely be considered fair to the local taxing authority or safe as a scheme of taxation, although it might be resorted to as a last resource for accomplishing a very important object. If apportionment is resorted to, it should be through mutual agreement and co-operation.

It might also be possible to finance regional planning through private subscriptions as is frequently done for unofficial city planning commissions, but this method is somewhat too uncertain for an official commission to depend upon, as the financial support should be certain if a permanent working organization is to be maintained.

#### GENERAL CONCLUSIONS

There will probably be general agreement that there should be national and state legislation creating regional planning organizations and giving them the power to act, and it seems reasonable to assume that the enactment of such legislation is only a matter of time and patient and persistent campaigning; substantial progress toward that object has already been made in some of the states and with such power granted the working organizations will follow and some scheme of financing them will be devised.

It will not do, however, to suspend all thought of regional planning pending so uncertain a thing as favorable legislation on a large scale, and the most available mediums for getting any kind of action seem to be city planning commissions and committees of both the official type and the type created by business and civic organizations which, though having little or no real authority, often exercise a very potent influence in shaping the course of public affairs and obtaining public improvements. Such organi-

zations generally find some means of financing their activities and, when there comes an abatement of the present heavy drain upon both public and private finances to pay the obligations inherited from conditions of war, the financing of the works of peace and progress can reasonably be expected to be less difficult than at present. Our work among the twenty-six official city planning commissions of Pennsylvania leads us to believe that had financial conditions been normal, comparatively little urging would have been required to obtain sufficient appropriations to have enabled them to make substantial progress.

Even under adverse conditions new commissions and committees are being created and are entering enthusiastically into their work. The Citizens' Committee on the City Plan of Pittsburg is a new organization substantially financed from private sources which aims to co-operate with all the municipalities in the Pittsburg industrial district and is working out its studies and plans upon a regional area basis and it is setting an example that is well worth emulation elsewhere.

Any area in which there are two or more municipalities having common interests and intimate relationships would be appropriate for regional planning purposes. Boston with its thirty-eight adjacent and inter-dependent municipalities is one of the best illustrations of a regional area for planning purposes, and its failure to set up any effective scheme of co-operative planning during years of effort is prophetic of the probable failure of regional planning schemes unless they are organized under adequate legislative authority.

Another type of area for regional planning purposes would consist of a single municipality and the adjacent areas, whether incorporated or not, over which urban improvements are extending or may be expected to extend in the course of time. The failure to plan for the future of such unincorporated areas is one of the marked weaknesses of present city planning methods.

There are countless examples of metropolitan, industrial, mining, and even agricultural regions composed of groups of incorporated areas so closely related and so inter-dependent in their social and business interests that their political boundaries mean nothing to their citizens yet they may represent several forms of local government. It is inconceivable that any proper plan can be prepared for any individual unit in such a group until a survey and plan of

the main highways, transportation systems, drainage and other public works common to the public service of the entire region has been prepared. The regional plan should provide only for the main lines of development and allow each administrative unit to work out its own purely local problem.

Our planning programs should not be confined so closely to areas already developed but should broaden out and include those that grow out from the populous centre and over which urban development will spread in the future. The development of national resources on a vast scale, modern methods of transportation, the tendency of great industrial enterprises to get away from congested centres, and the gradual drift toward the decentralization of large communities are forcing us to adopt new geographical areas for planning and will require legislation, organization and financing along broader lines.

This report has purposely treated the subject in a general manner, making suggestions rather than recommendations, and hoping that the resulting discussion may bring out such an expression of opinion from the members of the conference as will permit some definite program of legislation, organization and finance for regional planning to be formulated which the conference can unitedly support and for which a systematic campaign can be organized.

There should also be read into this report the very able papers presented at the Niagara Falls Conference by Thomas Adams and Morris Knowles, the former using the problems of the Niagara frontier region to emphasize the importance and value of regional planning and the latter presenting a thoughtful and logical statement of the problems which should be considered regional ones with the reasons therefor and suggesting practical methods for making regional planning effective.

#### DISCUSSION

THOMAS ADAMS, *Ottawa, Canada:*

It seems to me inevitable that we should broaden out city planning to take in regional planning, because regions—industrial regions—are now developing in all city areas and the municipal boundary no longer is the proper boundary for industrial occupation, and it cannot be the proper boundary for city planning.

There are a few directions in which city planning has somewhat

broadened out in the last year or two. To some extent they represent experiments in what might be called an expansion of the area and a more intensive development of city planning—regional planning and zoning. Now both are, to my mind, very splendid movements in connection with the development of city planning, but the danger in connection with zoning is the same danger that arose in city planning in connection with park planning—that is the danger of making zoning city planning.

Regional planning represents a more extensive area and a more comprehensive scheme than even city planning itself. If you build from your regional plan, the city plan within it, or the village plan, or the rural plan, all logically follow. Then you have your various phases of each plan, zoning, housing, industrial development, etc. But do not let us begin with the wrong thing as the basis; let us begin with the region and we will get the public mind easily educated because we are dealing with things in logical order.

Zoning has been part and parcel of every city plan in Great Britain since 1909. It is not called zoning, notwithstanding it has been a necessary element in preparing the plans, to recognize residence and business areas separately. The British method has been to deal with the undeveloped area, rather than the developed area—that is, in the British town planning legislation, they have confined the planning to areas which were not yet built upon, rather than those which are built upon. To that extent I think the British legislation has been defective. They should have combined the areas already built upon with those to be built upon. On the other hand, the system of zoning has rather been confined to areas already developed or partially so. In the German and Italian and Swedish legislation they have recognized the region, and now we are being gradually driven into the idea that we must recognize the region if we would get the city plan working properly.

In Canada we have since the last conference adjourned attained a considerable advance in regional planning—the city of Niagara Falls is to apply for a special act, and under that act a commission will be appointed in which there will be six members representing Ontario, and six members representing the territory outside of that place.

The whole system of planning on that side of the river from Erie, Ontario, on to Niagara-on-the-Lake, back to twenty or thirty

miles, will be dealt with by one main commission and several auxiliary commissions acting under one consultant, but each with their own supervising officer. They will deal with the whole twenty-mile front, linking up the park which is at present at Niagara Falls, and making a park system along the whole Canadian side of the river. That is a regional development and can be nothing else.

If there is one thing regional planning should encourage, it is the recognition that we can no longer think of the manufacturer going into the city as a matter of necessity. The manufacturers of today are seeking sites outside the city and the places to which they are moving are being planned to avoid the very evils which have driven them from the cities. Just there is one necessity for regional planning.

To summarize the two points I have endeavored to make. In decentralization of all large cities there is a necessity of immediate recognition of regional planning if we are going to prevent the same evils outside the city that have driven industries from the center to the suburb. The second question is that in the development of a plan, we should begin from the original survey of actual regions and work up to the intensive planning problem rather than begin with the other end with one problem, say zoning, and work back to the regional plan.

**F. L. OLMPSTED, *Brookline*:**

I want to emphasize two points taken up by Mr. Haldeman in his paper.

One is in regard to the limitations of jurisdiction in regional planning. I don't think we can overestimate the importance of that limitation, in order to maintain local responsibility for local planning. He pointed out the need of it, but it seemed to me his statement of the limitations was not full enough. As a first suggestion toward such a fuller statement of the limitations, I have in mind something of this sort—using in part Mr. Haldeman's statement. I would say that a regional plan should deal with only those schemes of physical . . . development which . . . render a public service (Mr. Haldeman said public or private service, but I am inclined to limit it to public service) to the people of two or more governmental units, or which involve improvements to be made within one governmental unit for the benefit of people

in another governmental unit. That doesn't cover the ground, but goes a little further towards covering the ground than the report. The point is to maintain the responsibility of the local government unit for all local planning and to avoid loading up the regional planning authority with responsibility for details which the local governmental units are in a position to deal with for themselves.

Second, from the national point of view it seems to me that the place for regional planning activities is probably in the proposed department of public works, but including representatives of the body or bodies charged with responsibility for supervision over interstate transportation facilities, whether the latter be organized under the proposed department of public works or not. Presumably the national supervision over railroads will not be a part of the proposed department of public works. National regional planning activities should be supported, of course, by federal appropriations.

The statement in the report that "the financial support of these organizations, their co-operation, and the making of plans, should be mandatory upon the respective national, state, and municipal governments" seems to me—as written—meaningless. No action can make it mandatory upon Congress to make national appropriations for such matters and no national action can make it mandatory on the states to act. The mandatory element can come in only as between the state and the municipal units which are its creatures.

The state agency for regional planning should be a body representing both the state department of public works, or its equivalent, such as the bureau of municipalities in the state of Pennsylvania. If the state department of health is separately organized, it also should be represented in the state regional planning agency. The support of the state regional planning agency, of course, would be by state appropriation, and under authority of the state legislature it would have certain mandatory powers in respect to local government units within the state. But no national action could make it mandatory for state legislatures to appropriate funds for regional planning.

As to an interstate or intrastate regional unit, comprising two or more municipal units,—such a regional unit as a separate organization for dealing with regional planning, it seems to me, should

be organized only where clearly necessary, that is, where the problems peculiar to the region are so complex and numerous that they cannot be handled effectively by the state planning agency working in co-operation with a group of municipal planning agencies. Under the guidance and control of the state planning administration, or board of control, any group of local municipal planning agencies having joint interests could be brought to work together, and in a great many cases could accomplish satisfactory results without setting up a special regional commission interposed between the state department of planning and the municipal planning agencies, especially if there is provision under which the more interested municipal planning agencies within such a region may contribute to expenditures for surveys and studies beyond their own boundaries within the region.

Where a special regional planning agency must be set up it should be constituted by special act, with funds appropriated by the state but assessed upon the several municipal units in the region. This method has worked well in the case of the Metropolitan Parks District of Boston, where the funds are paid out of the state treasury and the annual cost is assessed upon the several municipalities included within the district by an apportionment commission appointed once every five years by the supreme court of the state.

One more point in regard to regional planning areas. What I have said thus far, and what was said about financial support in the report, related chiefly to financial support for making studies and plans. Now with regard to making those plans effective, the establishment of effective control means much expenditure in the execution of plans. I am personally opposed to a centralization that weakens local independence and responsibility. The execution of plans, I think, should be left to the local authorities as far as possible. The main reliance of state planning authorities, and still more of any nation planning authority, should be upon education and persuasion of the responsible local authorities, supplemented by the offer of contributions from the central treasury toward the expense of carrying out improvements approved by the central authority, rather than upon mandatory powers which weaken the local sense of responsibility and initiative.

## ZONING FROM THE VIEWPOINT OF THE LENDER ON REAL ESTATE MORTGAGES

W. L. ULMER

*Cleveland, Ohio*

Zoning has been very properly described as the greatest stabilizer of real estate values ever conceived, therefore I feel safe in saying that the lender on mortgage is more vitally interested in zoning than any other one class, with the possible exception of the individual owner of real estate.

To the lender on mortgage, the stability of real estate values is of major importance. The losses that the money-lending institutions of this country have had to take on their mortgages have invariably occurred not because of lack of judgment or lack of knowledge of values on the part of the appraiser, but because someone had built an objectionable building in the immediate vicinity of the property loaned upon, or because of a sudden shift of values in an entire neighborhood for some reason beyond the control of the lending company or the owner.

From my experience, extending over a period of many years, I do not hesitate to say that fully seventy-five per cent. of all of the losses taken by the lending institutions of this country arise out of the fact that unregulated and unrestricted building is the rule rather than the exception. Very often depreciations of value and change of character of neighborhoods come with alarming suddenness. Often they have come long before the mortgage was due and collectible, and the owner of the mortgage as well as the owner of the particular property has had to take a loss.

New York has so often been held up as a horrible example of the lack of zoning that I have a natural hesitancy to use it to illustrate the point I am trying to make, but since it is truly a horrible example, I hope I am pardoned for again holding it up to you. You are doubtless all familiar with the migration of the finest shopping district of the world from Twenty-third and Sixth Avenue to upper Fifth Avenue, and its effect upon real estate values in the Twenty-third Street district. You have been told that the reason for this great and costly migration was the presence in the immediate neighborhood of a great number of garment factories and other

factories, their armies of workers who made it impossible for the shoppers to find room upon the streets, and the resulting trucking of raw materials and manufactured products which added immensely to the congestion.

Perhaps it has never occurred to you that the agencies directly responsible for the great shifting of trade, and its resulting loss of uncounted millions of dollars in real estate values, were the mortgage companies and the great money-loaning life insurance companies of New York City. This sounds like a startling indictment, but I believe you will agree with me that it is a reasonable one before I have concluded.

New York has always been the money center of the nation. Money gravitates to New York as naturally as water runs down hill. There has always been, until the war came along to upset this as it did so many conditions, a superabundance of money to loan on mortgage on real estate. Naturally, the money-loaning institutions of New York felt that they wanted to place their money in New York, because they could take personal supervision over it. They could personally inspect the security, and were familiar with it. They felt that they need not trust agents or employees in other cities, so rather than go into new fields—other cities—to loan their money, they applied intensive cultivation methods to the Island of Manhattan.

It must be borne in mind that there was practically an unlimited amount of mortgage money in New York at this time, and there was competition between loaning institutions in the loaning of money.

The inevitable happened. Demand met supply—the money found a market and borrowers appeared to absorb the money so freely and lavishly offered them. Speculative builders and real estate operators came without number with plans and ideas for all sorts of buildings. They built apartment houses, they built loft buildings, they built mercantile structures, and they built and built and built. They built without any regard for the economic need of the structures they were erecting. Apparently they had little trouble in procuring mortgages. If one mortgage company or life insurance company did not approve the loan they wanted, they knew they could go across the street and get a competitor to take it. It was a natural and inevitable result of the eagerness of the lenders of money to sell their commodity. Competition be-

tween them benefited no one but the builder. It enabled him to build with less and less of his own money. The builder, having less of his own money to invest in each building, built more buildings. The mortgage companies got more mortgages.

This intensive development kept up until there were actually more buildings than tenants. This was especially true of the loft or light manufacturing buildings, which, as you know, are built to great heights in New York. Remember these loft buildings were built without any restraining influence, such as is now exercised by the Zoning Law. The operators built where they pleased. What was more natural than to build them in close proximity to the fine shopping district, where their customers did business. What happened? The owners of these new buildings, having no tenants, and therefore no income to pay expenses and interest on their mortgages, had to get tenants. Where did they get them? From the older buildings further down town, of course. They offered the tenants in these old buildings the inducement of cheap rent, new, modern, attractive quarters in beautiful fire-proof buildings, in a nice new neighborhood, in place of the old, out-of-date, dirty, unsanitary lofts they had been occupying further down town, and, of course, they listened, and of course they moved into the dazzling new buildings the kind-hearted landlords had so obligingly built for them and which they were willing to rent at such reasonable prices.

Inevitably, the older textile manufacturing district further down town suffered. It suffered enormously. Once the migration to the new loft district started, it did not take long to empty the older buildings by the hundred. Entire city blocks became vacant and remained vacant for several years. Undoubtedly many of you walked down lower Broadway and the side streets in the old textile district several years ago and marvelled, as I have, at the row upon row, street upon street, of fine old buildings tenantless and practically worthless. What the loss to the owners of these buildings amounted to, I think I can leave to your imagination. That it ran into hundreds of millions of dollars is simple arithmetic.

The other of the two things that happened was the migration of the department stores and shops from the new loft district at Twenty-third and Sixth Avenue to the new shopping district on Fifth Avenue beyond Thirty-fourth Street. These stores and shops were literally forced out of the magnificent homes they had

built, some of them, only ten years before. There simply was not room in the streets for the shops and shoppers and the factories, their employees and the congested traffic caused by the factories. Here, too, the migration was complete. Old buildings were abandoned and what had been, a few years before, a magnificent retail shopping center, became an area of deserted, tenantless and worthless buildings. Land values in a few years dropped from \$20,000 per foot front to \$4,000 per foot. The resulting loss in real estate values in this district, I can again leave to your imagination.

The moral intended to be conveyed by this story can very plainly be seen. If the mortgage companies and life insurance companies had not been blessed with a plethora of money they would not have been so eager to force it into the hands of the builders and real estate operators. If the real estate operators had not had this money offered them so freely they would not have built their loft buildings in such great numbers and in such close proximity to the shops and department stores. If there had not been so many new loft buildings the older buildings in the down town textile district would not have lost their tenants. Again, if there had not been so many new loft buildings, the Twenty-third Street shopping district would have remained such. If the older buildings had not lost their tenants, and if the stores had not moved from the Twenty-third Street district, real estate values in at least two sections of Manhattan would not have taken such a spectacular dive; and all this because there was no restricting or guiding influence like the present Zoning Law. Had there been such a law, the entire long chain of evil consequences would never have been set in motion, and countless millions of dollars that were absolutely thrown away could have been saved. If I have now made clear to you why lenders on mortgages have such a vital interest in zoning, I can illustrate the reason without going to New York.

A public-spirited citizen in one of our smaller cities, for example, erects an eight-story office building. It is a splendid risk and we loaners of money are anxious to take a long term mortgage on it. Along comes another public-spirited citizen, and puts up a fifteen-story office building adjoining the first building. He doesn't care if he robs his neighbor of light and air, rendering half of his office valueless. This is a free country, and he does as he pleases, but what about the institution that has the mortgage? Has its se-

curity been depreciated? Could it have foreseen the result? I leave the answer to you.

Let me give you an illustration from my own experience in Cleveland. A clerk in one of our down town stores, after a life-time of work, accumulated enough money to buy a home in a brand new neighborhood in the outskirts of our city. He paid \$9,000 for his house, and we were glad to loan him \$5,000 on mortgage. The equity of \$4,000 represented all the money he had in the world. He bought this house on a residence street, and he bought it way out in a new neighborhood because he wanted room and air and sunshine. He had been living down town in a cramped apartment all his life. A few months after we placed our mortgage, I happened to drive by this man's house, and saw that there had been erected adjoining his house, a store building. This man's house was set back forty feet from the street line; the store building was flush with the sidewalk. I stopped off to see him and asked him why he did not enjoin the building of this store building. He replied that he had tried to do so but found that the restrictions he had relied upon were defective and that he could do nothing.

A few months later I passed this house again and found that another builder had bought the lot on the other side of him and had also erected a store building flush with the sidewalk. Remember, his house was set back forty feet, so there he was pocketed between two two-story store buildings, with his property utterly ruined. Had there been a zoning law to protect this man, the first store would never have appeared on this residence street, nor, of course, the second one; his property would not have been ruined, nor the entire street spoiled for residence purposes.

Bear in mind, please, that this occurred in a new suburban neighborhood and not in one of the older sections of Cleveland. As the purchaser of the mortgage on this property, I had every reason to suppose that when I made a loan on a new house in a new residence district, my security would remain constant, if it did not appreciate. By the widest stretch of the imagination, I could not have conceived that within six months these two store buildings would flank this property on either side, and bring its value down so far as to impair the principal of my mortgage.

My purpose in giving you these instances, and the story of New York, is to point out the absolute necessity for a zoning law from the standpoint of the lender on mortgage. Had there been a

properly drawn and administered zoning law in New York City ten or fifteen years ago, none of the causes and effects enumerated above would have taken place. The changes that would have occurred would have been conducted in an orderly natural manner and could have been precisely predicted. As the necessity for more lofts came, these buildings would have been directed into locations economically suited to their needs. There would have been no such depreciation of real estate values and impairment of mortgage loans as took place.

A properly drawn and administered zoning law is of direct benefit to the lender on mortgage, because it stabilizes real estate values. It sharply defines and fixes for a long period of years the character of the zone or district, and assures the lender on mortgage freedom from loss during the life of his mortgage. It will to a very great extent allay the timidity properly evidenced by the careful lender on mortgage upon going into a new neighborhood. He will no longer fear the destruction of values in that neighborhood by the presence of undesirable buildings or usages. It will have the same effect to an even greater degree in old neighborhoods, because old neighborhoods are more liable to change of character than new ones.

And, of course, as a zoning law benefits the lender, so to a much greater degree does it benefit the community. Nothing, in fact, is of so much importance to a community that wants to grow, as a free money market. Nothing retards a city's growth and progress more than a lack of money on mortgage. So that in making a plea for the zoning of our cities on behalf of the mortgage men, I feel that I am at the same time doing the community an even greater good.

## THE NEED OF ZONING IN CINCINNATI

BLEECKER MARQUETTE

*Executive Secretary, Cincinnati Better Housing League*

The task of this Committee appointed to prepare an exhibit and a report of actual cases in Cincinnati showing the need of zoning here has been comparatively simple. Every city in the country that has developed without zoning has any number of cases showing the harmful result of the lack of regulation of the location and the height and area of buildings. In making its report this Committee has limited itself to presenting photographs of such examples. We do not attempt to indicate in any of these cases whether the district should properly be residential, business or industrial. That will be the proper field of a Zoning Commission, or whatever body undertakes the zoning of the city, and it can be determined only after an exhaustive study of the present development and the tendencies in the growth of the city.

These photographs, less than two dozen taken at random from hundreds of examples that everyone knows in different parts of this and of any other city, show how real estate values are being destroyed, how homes are being daily surrounded by buildings that by reason of the noise, odors and dust attendant upon business and industrial uses, make those homes less desirable if not entirely unfit for residence purposes. The vital importance of this fact becomes the more apparent when we realize that practically nobody's home is safe from invasion by detrimental uses. Campaigns are being carried on and slogans created urging men to own their own homes, and we provide no guarantee that after they have invested their entire savings in a home the owner next door may not destroy that home by putting up a building that rightly has no place in a residence district.

The haphazard mixing of uses of buildings is detrimental not only to the residence, but to business and to industries. Factories need wide streets, paved with a view to taking care of heavy trucking, so planned as to provide for direct and speedy delivery of factory materials and products. Industrial districts require especial attention to switching and to railroad facilities in general; they need large water mains to protect them from the danger of destruction by fire. When factories are mixed in with residences those

facilities cannot be provided. Furthermore, the residence owners are constantly objecting to the noise, the odors, the dust that necessarily accompany industrial uses, but are extremely annoying to residence uses. The result is constant friction, constant protests, and frequently the factory must surround its legitimate uses with various costly and otherwise unnecessary safeguards to keep peace in the neighborhood. Cases of this sort are numerous in every unzoned city. Another way in which a proper zoning system will serve the industrial interests of Cincinnati is by making available more space for industrial sites. That is a very pressing need in Cincinnati. There are many cases where residences are now occupying or have begun to enter districts that are logically industrial territory. A proper zoning system will determine where these sections are and set them aside for industrial uses. The problem of our railroad terminals which is pressing for solution is intimately connected with a determination of what sections of this city are destined to be developed industrially. A zoning system is essential to the most effective solution of the problem of properly locating railroad tracks and railroad terminals here.

#### HEIGHT AND AREA

I have limited myself so far practically solely to the questions of use restrictions. Height and area restrictions are equally vital. The congestion of traffic in the business district of the city is so great that we are talking more about that than almost any other of our problems. Even the ordinary citizen who knows nothing of city planning realizes the seriousness of this congestion. People generally understand that it results from the streets being too narrow for the amount of traffic they have to take care of, but they do not think through to the fundamental fact that if buildings in our down-town district were not built too high for the width of the street and over too large a portion of the lot that congestion would not have resulted. A proper system of zoning for the city would not change the height and area of these existing buildings, but it would prevent similar congestion in other parts of the city.

The tenement house districts of down-town Cincinnati are seriously congested. Tenement houses are so overcrowded on their lots that they cut off each other's light and air and leave practically no space for children to play. But where Cincinnati has a distinct advantage over other cities is that there has not been here the

growth of the huge new tenements in outlying residence districts, occupying seventy or eighty per cent. of the lot, housing twenty-five or fifty families, and making the degree of congestion many times worse than in the older houses. New York is the most striking example of this unfortunate development. The new tenement houses there springing up rapidly in most of the outlying districts, except where checked by the zoning ordinance, are causing even greater congestion than before—842 persons to the acre is the average for New York's new tenements. Our tenement houses, on the other hand, are practically all old—they will wear out and be consigned to the scrap heap before many years. New York and many other large cities building huge new tenements are destined to be burdened with this tremendous congestion for years to come. In Cincinnati we have a wonderful opportunity through a proper zoning system to prevent for all time to come such congested development in our suburban districts.

In conclusion, may I emphasize two points? First, if these illustrations show anything at all they show the need for action on zoning here at the earliest possible time. Every month that goes by brings up new cases of buildings being constructed in sections of the city where they ought not to be. When once that happens, the harm has been done, every bad use tends to stamp the district. A district which today is a residence district of an excellent type may be in a very few months so seriously injured for that purpose that it would have to be placed in a business or even an industrial zone. The Building Commissioner and the City Planning Commission now have power to prevent some of the most objectionable industries from invading residence districts. But this power is altogether too limited and in no way takes the place of a comprehensive, scientifically worked out zoning plan.

Finally, may I emphasize particularly to Cincinnatians that a zoning system does not mean upsetting the growth of the city by interfering with the use, height or area of existing buildings. It regulates principally structures erected in the future. It will not in the main prevent in a given district uses of buildings or buildings of a height and bulk now permitted. But it will aim to protect the present standards of each district—an apartment or a tenement house to go into a district of small residences must conform to the standards of that district and not count on stealing its light and air from its neighbors.

## DISCUSSION

ROBERT H. WHITTEN, *Cleveland*:

I want to speak just a moment in regard to the classification of uses in connection with a zoning plan. The number of classifications which are required depend upon the least number with which you can reasonably accomplish the purpose of zoning. In previous studies of the subject I think it has been usually assumed that all classes of heavy industrial use might be located together, but I think it very essential that they be divided into three classes. This is necessary because of the very great divergence in the nuisance character of these uses. It is inconsistent and unreasonable to establish a district in which there is an industry, the nuisance features of which extend over a two-mile or three-mile range, and include within that same district an industry, the nuisance features of which extend only a quarter of a mile, or only two hundred feet. Take for example the automobile industry: there, the nuisance feature probably does not extend over two hundred feet from the factory, and no residences for industrial population should be permitted within that distance. On the other hand take the boiler factory, or a structural iron works: there the nuisance feature extends about a quarter of a mile. Another example is a fertilizer plant, or a stock yard, or a reduction plant, where the nuisance feature may extend two or three miles.

Now in some cities it is undesirable to permit a reduction plant or a fertilizer plant anywhere within the city limits; but in most great cities it is necessary to provide some section where those industries can go. To permit them to go into any part of the city where you might permit a boiler factory or a structural iron works would be to scatter them, or permit their scattering in such a way as to injure the entire city.

In the proposed Cleveland zoning, we are providing three classes of heavy industries: the nuisance district, in which such industries as the fertilizer plant and the reduction plant and the stock yards would be permitted; a semi-nuisance district, in which the structural iron works, or the boiler factory, or the automobile industry would be permitted; and a district for heavy industries of a comparatively non-nuisance type in which the major portion of heavy manufacturing industries can be permitted, and can be permitted very close to the industrial housing section.

HERBERT S. SWAN, *New York City*:

There is seldom a city which takes up zoning that does not approach it from the piece-meal standpoint. Many of our zoning ordinances are passed not with the view of determining the method by which the city shall grow during the next fifty or one hundred years, but in order to get at a particular apartment house or a particular factory.

Now the time you take in formulating a half-baked piece-meal zoning ordinance is going to be so long that after you have gone over the various things that the city needs to be protected against, you could have passed a comprehensive zoning ordinance. Moreover, in the meantime, you are whittling away your support for your comprehensive zoning ordinance. If you protect private houses against apartment houses, and then protect them against garages and stores, and so on in a piece-meal way, you are gradually losing the support you ought to have for the adoption of a comprehensive ordinance. You ought to keep all of your support in reserve in order to push the ordinance all through at one time.

The number of use districts depends on the size of the town. I can conceive of a town where two kinds of use districts are all you need; and other towns where you don't need any. You take a little crossroads hamlet in the country, and you don't need zoning at all. When that hamlet grows until you have several hundred buildings, probably two kinds of district are all you require; a business district and a residence district. But if that city grows and has various kinds of industries, you want to protect them one against the other. The kind of districts you want depend upon what you have got. In White Plains, for instance, where they have adopted a comprehensive zoning ordinance, we are excluding all offensive odor industries from the city limits.

I want to emphasize that the creation of a one-family house district as such is not going to afford us the protection we want for the two-family house, or even the apartment house. It is not quite easy to draw the line between the one-family house on the one side and the multiple-family house on the other. If you do that you are going to have congestion on the one side, and you are not going to protect the one-family house on the other unless supplemented with other regulations. In several eastern cities that are now considering zoning ordinances, we propose to limit congestion on the acreage basis. In our most protected district in

Newark we limit twenty-five families to the acre. In Yonkers and White Plains we are proposing to improve upon that; we are limiting it to ten families to the acre. In other words you have to have a lot of about forty-three hundred square feet for a one-family house; for a two-family house eighty-seven hundred square feet; so that if you have an acre you can put up a ten-family house.

**ARTHUR C. COMEY, *Cambridge*:**

It has been the custom in New York City to designate certain districts as 'unrestricted' and permit any kind of a structure in those districts. Now nearly every city has large sections of undeveloped land within its corporate limits. If any building may be erected in such a district, the first one that comes in by chance sets the standard. To meet this difficulty we are proposing in Brockton, Massachusetts, to have a district of what may be called 'deferred classification,' in which no building will be permitted except under special permit, and that permit may be withheld pending the zoning of the region in the neighborhood of the lot upon which the building is sought to be placed. This proposal is only tentative, and I hope that there will be some discussion on the question of the reasonableness of it.

There is quite another matter on which I am looking for light, and that is in connection with zoning apartment houses. It is believed that in Massachusetts we cannot limit their construction by the 'use' restrictions, but that we can by height regulation, and I am suggesting that in zoning dwelling houses we should express the limitation not by the number of feet, but by the number of stories. We don't want to penalize the man who will build a two and one-half-story house within the thirty-five foot height limitation and permit another to put a three-story house within the same limitation alongside of the other two and one-half-story house. Of course if a man wants to put up a one-family three-story house we can arrange the zoning ordinance so that this can be done.

**B. A. HALDEMAN, *Harrisburg, Pa.*:**

I think Mr. Comey's suggestion for a 'deferred district' is valuable. We have found in zoning that the city is not a satisfactory unit and I believe we are not going to accomplish as much in attempting to regulate or cure the thing that already exists as by trying to prevent the recurrence of that thing. Therefore, we

should make the greatest possible effort to control new areas, and that may be done by deferring the regulations in a given district until we know just what is really required in that area.

**FRANK B. WILLIAMS, *New York City*:**

I think that deferred districts should be created if we can do it under the law, but I have a good deal of doubt about the legality of it except in Pennsylvania. Deferred districts come rather dangerously near taking an interest in a man's land without compensation. It means that in a given district the city would permit no buildings except under special license. Such a practice might be supported if it interfered with a man's right to improve his land for only a short period, say six months, but to deny him the right to use it for a longer period, or certainly for an indefinite period, I believe would be illegal.

**CHARLES H. CHENEY, *Portland, Oregon*:**

Mr. Comey has raised a question about zoning as applied to apartment houses. Portland, Oregon, is interested in zoning as a means of inducing the building of single family houses and decreasing the 'labor turnover.' The labor managers said to us during the War, "We must stop this 1,100 per cent. labor turnover that exists in some of the ship yards. We must try to keep fifty or sixty per cent. at least of our employees, and particularly we must find a way to provide homes for the married men and their families." Consequently we tried to adopt regulations which would encourage a man to put money into his own house. I am told that the working man in the East, in some cities, buys a two-family house so that he can rent one apartment; but that is not our experience on the Pacific Coast, in fact, not the experience in most of the cities that I am familiar with.

I have sometimes wondered if our job after all in zoning is not to protect the home above all other things as a safeguard to industry, and as a means of building up a responsible citizenship.

The other point on which I wish to speak is the use of zoning to create industrial districts unencumbered by residential conditions. We find that today industries are obliged to do their work more or less on the residential basis because they are surrounded by residences, residences which in the end may drive them out as they have done in some parts of Los Angeles. In Portland we have

established 6,000 acres for an industrial district where no residences can be built. On these 6,000 acres—which are pretty well scattered through the city at points where industries should advantageously be located—we can guarantee to all industries security in their investment. Berkeley, California, was the first city, I believe, to establish such industrial areas in which residences are prohibited.

MR. COMEY:

If you have established an industrial district, will that in and of itself keep new residences out? In other words, have you any experience of new houses going into a district which has been set aside for heavy industries?

HARLAND BARTHOLOMEW, *St. Louis, Mo.:*

I think Mr. Comey's question is answered by a map which we made in St. Louis, showing the new buildings for a period of five years over the entire city. Much to our surprise we found that in what has been referred to as the 'blighted district,' which exists between the business district and the agricultural district, only eight permits had been issued for residences over a period of five years and all of these were for alterations; whereas, there were a number of permits for industries in the same district. Most of that area is occupied by residences; it is a so-called 'congested district,' and it will be probably a hundred years before St. Louis can develop enough industries to absorb all of that area. To exclude residences from it would be a questionable policy. On the other hand where a new area is being laid out and zoned for industrial purposes, I think it would be very wise in some instances to exclude residences and the incidents of residential development, such as subdivision into small lots, minor streets, water mains, sewers, and so forth.

ALFRED BETTMAN, *Cincinnati, Ohio:*

I want to ask whether the discussion can be diverted to an entirely new aspect, and that is: What sort of an administrative agency should or should not be created for the enforcing of these zoning ordinances? In other words, as I pointed out in a recent court decision, the question was opened up as to whether an administrative agency should have discretion to permit departures

from the regulations; whether or not, in other words, some latitude ought not to be allowed in order to keep the ordinance sufficiently elastic.

**MR. BARTHOLOMEW:**

I believe that the zoning ordinance should be adopted in the usual legislative form and should be amended by the legislative body of the city. The city planning or zoning commission in my opinion should be free from politics and devote itself entirely to the preparation of the zoning ordinance and educational and other work which is necessary for the preservation of the plan.

**MR. WHITTEN:**

I think it is very essential to have a Board of Appeals to pass on the border-line cases, to give a certain degree of elasticity to the provisions of the ordinance.

There are many cases in connection with the administration of a zoning ordinance, the boundary line between districts, where it is often highly desirable to give a little leeway this way or that, in order to prevent undue hardship in the application of the zoning principle; and that elasticity will save the necessity of adopting numerous amendments to the zoning plan. I think that the Board of Appeals should not be the City Plan Commission, but there should be an administrative board that should be vested with practically as broad powers, and perhaps in some cases with broader powers than Boards of Appeals which administer building codes.

## RECENT COURT DECISIONS ON ZONING

ALFRED BETTMAN, ESQ.

*Cincinnati*

As reports upon the court decisions on zoning have from time to time been made to this Conference, this report, to avoid duplication, will restrict itself roughly to the period 1917 to 1920.

In that period there have been no decisions which involved the constitutionality of a comprehensive zoning plan—that is, a plan for the zoning of the whole or a major part of the city, as distinguished from the selection of one or a few protected districts without districting the whole or most of the city; and there has never at any time been an adjudication by an upper court which invalidates any portion of such a comprehensive plan. During this period, the law on the subject may be said to have been fairly stationary and no jurisdiction, federal or state, has taken what we would call a backward step—that is, has narrowed or limited the zoning powers of the city as compared with previous decisions of the same jurisdiction. Courts which had previously sustained zoning as within the constitutional scope of the police power have, with little further argument, sustained this position in relation to new applications of zoning principles which have come before them. For instance, in California,<sup>1</sup> where the validity of the procedure for a change from a residence to an industrial district was involved, the court assumed the constitutionality of the general principle and approved the procedure specified in the zoning ordinance.

Such change as has taken place has been in the line of progress—that is, toward a greater freedom for the city in regulating the use of property in accordance with zoning or districting systems. This progress is well illustrated in Minnesota. That state had previously declared invalid the exclusion of stores and apartment houses from residence districts.<sup>2</sup> The same ordinance came before the court in February, 1919, in the case of *State ex rel. Banner*

<sup>1</sup> *Sam Kee vs. Wilde*, 183 Pac. 164, Cal. 1919.

<sup>2</sup> *State ex rel. Roerig v. Minneapolis*, May, 1917, 162 N. W. 477.

*State ex rel. Lachtman v. Houghton*, July, 1916, 158 N. W. 1017.

Grain Company *v.* Houghton.<sup>3</sup> That case involved the exclusion of industrial uses from a residential district. The district was peculiarly fitted for industrial use, lying along a railroad right-of-way and being very sparsely settled. The petitioner in the case desired to erect a flour mill and claimed that his plans included all modern appliances for the suppression of dust and noise, and that was made an issue of fact in the case. The court affirmed the general principle of the previous cases, namely, that harmless uses cannot be prohibited. It, however, treated the question of the harmless or offensive nature of the proposed use in the particular district as one of fact and refused to set aside the lower court's finding on this fact issue, adding, "the area having been legally established as a residential district and the relator thereafter claiming the right to erect and operate a factory therein, the burden is upon him to show that the proposed industry would not impair the value of the property within the district or seriously interfere with its proper enjoyment as residential property." This pronouncement is a very distinct judicial sanction of the principle that the preservation of property values is itself a legitimate motive or purpose in the exercise of the police power and that an impairment of the use of a residential district for residence purposes would itself be sufficient to uphold the exclusion. As an indication of the tendency of the courts in these cases, this is a most encouraging development.

The earlier unfavorable decisions upon the Minneapolis ordinances, which were exercises of the police power, evidently caused the proponents of zoning to turn for relief to the power of eminent domain. The Minnesota legislature passed a statute authorizing certain cities by means of the power of eminent domain to provide for the creation of residential districts and the exclusion therefrom of certain industrial and commercial uses and of apartment houses. The constitutionality of this statute was attacked on the ground that zoning is not a public use and does not come within the constitutional scope of the power of eminent domain. Late in 1919 the Supreme Court of Minnesota upheld this contention and declared the statute to be invalid;<sup>4</sup> but upon a rehearing the court reversed the previous decision and early in 1920 upheld the statute.<sup>5</sup>

<sup>3</sup> 170 N. W. R. 853.

<sup>4</sup> State *ex rel.* Twin City Building Co. *v.* Houghton, 174 N. W. R. 885.

<sup>5</sup> State *ex rel.* Twin City Building Co. *v.* Houghton, 176 N. W. R. 159.

The case involved the refusal of the Minneapolis Building Commission to grant a permit for an apartment house. In the course of its final opinion, the court used the following language:

"It is time that courts recognize the aesthetic as a factor in life. Beauty and fitness enhance values in public and private structures. But it is not sufficient that the building is fit and proper standing alone; it should also fit in with surrounding structures to some degree. People are beginning to realize this more and more and are calling for city planning, by which the individual homes may be segregated from not only industrial and mercantile districts, but also from the districts devoted to hotels and apartments. The act in question responds to this call and should be deemed to provide for a taking for a public use."

This is good doctrine and, taken in connection with other recent Minnesota decisions, indicates that a comprehensive districting plan under a well-drawn statute would probably have been ultimately held to be within the police power, and that it may be a mistaken policy to seek the protection of and pay the costs of the use of the power of condemnation.

Those of us who are zoning enthusiasts have occasionally been disappointed when the courts persist in requiring proof that the proposed excluded use falls within one of the traditional types of offensive nuisance. It is therefore a joy when we come across a decision in which the proposed excluded use is plainly of that type, but the court bases its judgment upon the newer and larger conception of nuisance which forms the basis for what we call zoning or districting. Such a decision is that of *Boyd v. City of Sierra Madre, California 1919*.<sup>6</sup> It involved an ordinance which excluded from a residence district a corral for the keeping of horses, mules, jenneys, jacks or burros for hire. The petitioner insisted upon establishing in that district a corral for ten burros and four mules. Although the lower court had found that corrals were productive of dust, dirt and loud noises, the appellate court held that the city's police power was not restricted to recognized traditional types of nuisance, and, in its opinion, gave voice to a most comprehensive statement of the power to create and protect residential and other districts. The court did, however, proceed in an amusing and

<sup>6</sup> 183 Pac. R. 230.

eloquent manner to treat this particular case as well within the recognized definitions of nuisance, saying:

“We know of no heaven-sent maxim to invent a silencer for this brute, that one beholding him, neck outstretched and jaws distended wide, could persuade himself that he but heard from the depths of the beast’s crimson coated cavern ‘a sound so fine there’s nothing lives twixt it and silence.’

“We fear that until nature evolves the whispering burro or man invents some harmless but effective mule muffler, we shall oft, in the dead and vast middle of the night, even in such corrals as appellant’s kept in a ‘cleanly, wholesome and sanitary manner,’ hear the loud, discordant bray of this sociable, but shrill toned friend of man, filling the air with barbarous dissonance and drowning even that shout that,

“‘Tore Hell’s concavo, and beyond  
Frighted the reign of Chaos and old night.’”

To the writer of this paper, the multitudinous noises of street cars, automobile trucks and other vehicular traffic of a main traffic street, or of a machine shop, are more nerve-racking and sleep-disturbing than the relatively soothing braying of the ass; and it should not require much of a development in the power of judicial imagination to realize that the same principle which permits a city to put mules in their proper place might well be extended to other noise-makers, and that the planning of the city is, amongst its other purposes and accomplishments, simply a subtle and modern method for segregating noise.

The short list of cases in these recent years relevant to the subject includes a few special situations which produced encouraging decisions. For instance, in Texas,<sup>7</sup> the charter of the City of Dallas required platted property to conform to the existing streets, and an ordinance of the same city required the front of buildings to be upon the street shown as frontage on the plat. The Supreme Court of Texas upheld all these provisions as within the constitutional police power. In Oklahoma in the case of *Walcher v. First Presbyterian Church*,<sup>8</sup> various industrial nuisances, including steam laundries, were prohibited within 150 feet of a church. While the court adhered to the conventional description of the

<sup>7</sup> *Halzell v. Ferguson*, April, 1918, 202 S. W. R. 316.

<sup>8</sup> 184 Pac. R. 106 (1919).

police power as including the promotion of public health, safety and welfare and did not indulge in any close reasoning to bring this particular case within this conventional definition, it upheld the ordinance as one calculated to protect public worship against noise and disturbance and on the general ground of reasonableness, which it defined in the words:

"The court must be able to see that it will tend to promote the public health, morals, safety or welfare."

That is a good statement of the problem of the city planner; to base his plan upon so comprehensive a survey and such demonstrable principles that he will be able to make the court see that the plan will promote the public health, morals, safety or welfare. This should not be difficult, and in most cases is not proving difficult.

Several cases upon the application of the New York City ordinance have come before the courts. In none of them was the constitutionality of the whole ordinance attacked or discussed. They are interesting and instructive as demonstrating the workings of a zoning ordinance, and the feature of the New York ordinance which might well be imitated or avoided. In the case of *People ex rel. McAvoy v. Leo*, 1919,<sup>9</sup> the superintendent of buildings had been requested to issue a permit for a garage in a residential district. The ordinance required the consents of a certain percentage of the residents, which consents had been obtained but informally drawn up. The Board of Appeals had refused to grant the permit. The court held that no consents were necessary, as the Board of Appeals could grant the permit under the general provisions of the ordinance, which authorized that Board to vary the zoning regulations in harmony with the general purpose and intent of the ordinance. On the facts of this particular case, where there were actual though not formally correct consents, this decision is substantially correct. But the general statements of the court point to the possibility of danger in the broad language of the New York ordinance concerning the power of the Board of Appeals to vary the regulations. The court cites another decision of a few months previous, namely, *People ex rel. Beinert v. Miller*, May, 1919,<sup>10</sup> which citation, however, hardly supports the reasoning of the later

<sup>9</sup> 178 New York Supp. 513.

<sup>10</sup> 176 N. Y. Supp. 398.

case. In that earlier case, the court had distinctly held that the Board of Appeals' power was that of applying the regulations and did not include the power to modify or alter the zones. The two cases leave the nature of the power of the Board of Appeals somewhat vague and uncertain. In drawing new zoning ordinances, it might be well to avoid the over-elastic language of the New York ordinance in this respect.

These New York cases and others which had preceded them clearly settle the right of appeal to the courts from decisions of the Board of Appeals, and this right was confirmed in the interesting case of *People ex rel. Wohl v. Leo*, December, 1919,<sup>11</sup> in which the court held, that where the Building Commissioner or the Board of Appeals had incorrectly interpreted the Zoning Ordinance, the court could and would, on certiorari proceedings, correct the error. In that case the petitioner owned an industrial building in a residential district. He had not used the upper floor for his business and had partitioned it, by means of a temporary type of construction, into dwelling quarters where he and his family lived. When his business expanded he moved his residence elsewhere and desired a permit to extend his business up into the top floor. The court held that the facts in the case did not show a proposal to change the use, and in its opinion stated:

"The meaning of the word 'use' is not confined to describing the act of using, but may also be employed to describe that property of a thing which renders it suitable for a purpose."

This might mean that if the construction of a building is of a nature making it normally appropriate for an industrial, as distinguished from a residential, use, then the building is to be treated as devoted to an industrial use, even though actually used for dwelling purposes. In view of the fact that in this particular case the residential use was admitted to be temporary, and the case related to a building most of which was actually given over to an industrial use, the decision is in substance correct. There is, however, danger in the court's definition of the word 'use.'

<sup>11</sup> 178 N. Y. Supp. 851.

## SLUMLESS AMERICA

LAWRENCE VEILLER

*Secretary, National Housing Association*

I have often wondered what a visitor from Mars would think if set down in those portions of our large cities which some of us call slums and which in most cities, I notice, the good citizens of that community refer to, somewhat deprecatingly, it is true, as 'blighted districts,' or 'the older sections of the city.'

Twenty years ago I had the temerity to write of those districts somewhat thus:

"The city of the tenements is the city of thousands of people living in the smallest space in which it is possible for human beings to exist, crowded together in dark, ill-ventilated rooms, in many of which the sunlight never enters and in most of which fresh air is unknown. It is a city of disease, poverty, vice and crime where it is a marvel, not that some children grow up to be thieves and drunkards, but that so many of them grow up to be decent men and women. All the circumstances which surround childhood, youth and womanhood make for unrighteousness. It is a city of ceaseless toil and endless privation—of a community of people always on the verge of poverty, unable to lay by for the future, dreading what old age may have in store for them, haunted by the never absent fear that as they grow old there is nothing left for *them* but the Potter's Field. It is a city where sickness reigns supreme and where the Great White Plague claims its victim by the thousands every year."

That was twenty years ago— Well, conditions haven't changed very much for the better in these two decades.

On the contrary the slum is spreading and extending itself over the face of the land.

Such conditions as were noticeable twenty years ago chiefly in great metropolitan centers like New York and Chicago, today are to be observed in all our large cities, and even in the smaller ones— Yes, even in villages and in the open country. The slum is everywhere.

It is a strange thing when we come to think of it that we should

have slums in America. These old-world sores should have no place in a new world—a land of promise and opportunity. The settlers of this country had carte blanche—but, behold, what we have written upon that paper!

Most of us, perhaps, do not realize how venerable an institution the slum is. Even here in America, we have had slums for nearly a century. We have been conscious of them for over eighty years.

I should speak less disrespectfully of this ancient institution if it were part of the handiwork of the Creator, but I find no record of it in the Garden of Eden. That may be due to the fact that the occupants of that delightful place did not remain long enough for the slum to develop!

It is clearly a man-made contrivance. And what man has made he can unmake.

I should deeply regret it if I gave you the impression that we have made little or no progress in unmaking the slum. That would be most untrue. Great strides have been made in the planning and conduct of our cities, especially in recent years.

Though we have progressed somewhat, those of you who have first-hand knowledge of the conditions that prevail in the slums of our great cities will, I am sure, agree with me that we have lagged behind the rest of the civilized world.

I think the chief reason for this is to be found in the failure of our people to *understand* the slum—to realize what it really means. Imagination, we are told, is a quality that is lacking to the average man.

If all of our citizens realized what life in the slum means to the slum-dweller, the slum would soon cease to exist.

Have you ever—even in imagination—contrasted the day-to-day, night-to-night, home-life of the average well-to-do citizen with that of the slum-dweller?

Your average well-to-do man wakes in the morning in his large quiet bedroom, the air of which has throughout the night been freshened and tempered to his liking.

Your slum-dweller wakes, unrefreshed, in the foul air of a small, badly ventilated room which he has shared with several others.

Your average man steps into a comfortable bath that soothes and refreshes him, shaves and puts on clean, well-fitting clothes.

Your slum-dweller, on rising, stumbles in the twilight of his dark room over the shake-down beds of one or two children and perhaps

several lodgers, before he can find space to stand while he crawls back into coarse garments reeking with the sweat of yesterday's toil—and he washes in a handful of water poured into a basin.

Your average man goes into a dignified, pleasant dining-room to eat an appetizing breakfast prepared for him by others.

Your slum-dweller takes a chunk of butterless bread in his hand and, sitting or standing wherever he can find room, washes it down with a cup of indifferent coffee.

Your average man, with a sense of well-being, lights his cigar and goes forth to his day.

Your slum-dweller, with a grouch due to sheer physical discomfort, lights his pipe and shuffles down the ill-smelling hall of his tenement home.

Your average man, in agreeable surroundings, has throughout the day varied and stimulating work—creative and with a purpose which he understands.

Your slum-dweller, throughout the day, bends over one interminable, monotonous task—brutal in its demands and deadening in its effect.

At the end of his day, your average man has his spin in a motor, his exercise or relaxation, probably another bath, puts on clean clothes, sits down to a good dinner, reads, plays cards, or dances or goes to the theatre or listens to music until he is sleepy and goes to bed in a clean, warm bed in a clean, fresh room.

Your slum-dweller, at the end of his day, hangs from a strap in a car packed to suffocation, makes his dreary way from the crowded car past the garbage cans and refuse of the crowded street into the friction and discontent of his crowded home—to a wife discouraged by endless effort in a hopeless environment, and children to whom his best efforts have been able to give only this pitiful existence. He eats, on the corner of the overcrowded kitchen table, a plate of food which he is often too worn out to enjoy. At best he has, afterward, the vitiated air of the movies, or the vitiated 'hot air' of the I. W. W. gathering.

All the conditions surrounding your average man have made for vigor of mind and body and peace and contentment of spirit. He has had the stimulus of choice and the gratification of accomplishment. He has been refreshed by beauty, harmony and order.

All the conditions surrounding your slum-dweller have made for discomfort of body and discontent of soul. He has no peace

and no privacy—he has not even elbowroom, night or day. He sees no beauty and has no repose. His neighbor's wash shuts out his small patch of sky, and he must close such insufficient windows as his room may have if he would not hear his neighbors' quarrels. He works without inspiration and finishes his day without satisfaction or hope.

Am I not right? Is it not because we have never had these conditions brought home to us *in our own person* that the slum flourishes in America today?

It is part of 'the reckless luxury, the deforming mechanism and the squalid misery of our modern cities.'

And we go on, day by day, building cities that kill the people who live in them.

Many years ago John Ruskin said:

'It is the slightest way of killing to stop a man's breath by bullets. . . . At the most you do but shorten his life, you do not corrupt his life. But if you put him to base labor, if you blind his eyes, if you blunt his hopes, if you steal his joys, if you stunt his body, and blast his soul, . . . this you think is no waste and no sin.'

That our cities are killing people we cannot doubt, if we open our eyes to facts that are readily available. Does it not mean that the modern city is killing people when out of every 1,000 children born in 96 large cities of Great Britain 104 infants die every year; that in 148 smaller towns as many as 93 infants die each year, when in the Garden City of Letchworth only 36 children die each year out of every 1,000.

Twenty years ago we had not these striking object lessons before our eyes, but the Garden City movement has shown conclusively that the modern city as constructed by man means unnecessary disease and death.

I wonder whether the time has not come when we are ready in America to grapple with this great problem? Heretofore, except in sporadic instances, we have sat down passively in the face of these conditions and done little or nothing to remedy them, whereas the old world has been dealing with them effectively for generations.

Great Britain has demolished her slums with a ruthless hand. In 1866 Glasgow acquired eighty-eight acres in the center of the city, opened thirty new streets and widened twenty-six existing streets. In 1897 further improvements authorized included ac-

quisition of twenty-four acres as sites for workingmen's dwellings. The purchase and improvement of lands and buildings cost \$9,733,000 and new buildings \$1,946,000. In Liverpool, between 1885 and 1904, the medical officer of health brought about the demolition of 6,300 houses and, between 1906 and 1912, 1,902 houses were demolished, 637 rendered sanitary, 456 closed, and 59 condemned. Between 1864 and 1896, 40,000 persons had been uprooted.

Up to 1875 the central portion of Birmingham was overcrowded, unplanned and insanitary. In 1875 the site of the old city was made the subject of an improvement scheme which dealt with an area of ninety-three acres and 15,000 to 20,000 people. The area was laid out with new streets and open spaces. The worst dwellings were taken down and the rest put into sanitary condition. The gross outlay for this improvement was \$8,000,000.

Between 1890 and 1911, Manchester demolished 4,866 houses. Her first large clearance scheme was undertaken in 1891, when five acres were cleared of their slums, which the city replaced with large blocks containing 372 dwellings. The total cost of the undertaking was \$1,386,953.

The slum is exactly like a cancer on the body social and the body politic. It is a malignant growth. Like cancer, if taken in time, its development can be prevented; and like cancer, we are generally conscious of it only when it is fully developed. But whether soon or late, the only remedy for it is the surgeon's knife, and the sooner it is out, the less serious the operation.

Why have we done so little heretofore in America in the direction of slum clearance? Partly for the reasons already stated, viz., that we have not realized fully the significance of the slum, but chiefly because we have been staggered by the cost of getting rid of the slum. We have seen some slum spot growing and extending its evil influence, and we have said, "This ought to be wiped out," and then we have inquired what it would cost for the city to acquire this property and clear it out, and we have been staggered at the cost and have said, "This is hopeless; nothing can be done."

How foolish we have been not to realize that we pay the cost anyhow, only in a different way. Instead of increasing the tax rate to pay the interest on bond issues to acquire slum property, we pay annual taxes to maintain hospitals, prisons, reformatories, police and all the intricate mechanism of modern municipal govern-

ment, much of which is necessitated by the very slum that we hesitate to destroy.

This is no fanciful view. Wherever slums have been cleared out the death rate, the sickness rate, the crime rate, the immorality rate, have immediately and permanently decreased.

So, if we must pay the cost of getting rid of the slum in any event, how much better to grapple with the problem in a way that will produce not merely negative results, but positive ones.

How great a factor the slum is in the present unrest of the world, it is hard to say.

That the conditions which prevail in our slums are a factor in creating discontent must be obvious to all. I wonder whether, with the advent of prohibition and the removal of that solace which drink afforded the unfortunate slum-dweller, deadening his senses and making the slum tolerable to him—I wonder whether, with the removal of that solace will come a new unrest, a discontent with the squalid and sordid existence that has been meted out to so great a part of the population of our large cities. Whether he will not demand a better place to live when he can no longer escape to the saloon.

I was much interested in noticing in the daily press, a few weeks ago, an inflammatory document issued by the American Anarchist Federated Commune Soviets calling for a general strike because of the exclusion of five Socialist members from the New York Legislature. What interested me in this manifesto was the following:

“ . . . ‘Declare a general strike! Take possession of all of the food stores and factories! Reorganize the entire society upon the basis of communism! *Destroy all the skyscrapers and tenement houses of the present! Build houses surrounded by garden and orchards. Let the sweet fragrance of flowers and fresh lucious fruit replace the present stench of disease and suffocation and filth.*’”

This may not be divine discontent, but it is discontent that must be reckoned with.

We have heard much of the New World that we were all to face after the war. Lloyd George put it graphically when he said six months ago:

“ . . . ‘What does the new world mean? What was the old world like? It was a world where toil for myriads of honest workers, men and women, purchased nothing better than squalor,

penury, anxiety, wretchedness; a world scarred by slums, disgraced by sweating, where unemployment, through the vicissitudes of industry, brought despair to multitudes of humble homes; a world where, side by side with want there was waste of the inexhaustible riches of the earth, partly through ignorance and want of forethought, partly through intrenched selfishness.

"If we renew the lease of that world, we shall betray the heroic dead."

Are we in America incapable of following similar leadership? Do we believe in this new world, or shall we continue along the old paths?

I have such faith in the genius of the American people that I believe that all that is necessary to make the slum a thing of the past is the desire to abolish it. We shall be told, perhaps, that there are legal principles in the way of such action. There are not. Under the police power there is no state in these vast United States that cannot, whenever it so wills, get rid of its slums.

While there are no legal obstacles to getting rid of our slums, there are many practical considerations to be borne in mind. Chief of these is what to put in place of the slum. For, the land thus cleared, naturally must be used in some way.

In the few cases where there have been slum clearances in America, small parks have replaced the slum. But there is a limit to the number and extent of such open spaces that a city can absorb. And there may be no need of a park or playground in that particular locality.

The obvious plan that suggests itself to most people is to replace the dwellings destroyed with new dwellings. Most of the British schemes have taken this direction.

To do this in America is not so easy. For it involves the whole broad question of the desirability of municipal housing.

A discussion of that question is not appropriate to this occasion. Many people believe such a policy unsuited to American political and social conditions. Others believe that the solution of the housing problem lies that way.

It may be asked why does the replacement of slum dwellings with new dwellings involve municipal housing? Why can it not be done by private enterprise?

The universal experience is that where private capital seeks to acquire slum property for a clearance scheme and to replace it

with modern dwellings, that a sufficient number of the owners of such property see their opportunity to profiteer and hold their property at such exorbitant prices as to make the proposed development an economic impossibility.

The only way to cope with that kind of a situation is by invoking the power of eminent domain and having the city condemn the property.

To do this, however, under our federal constitution and under the constitutions of all of our states, the property in question must be taken for a 'public use.'

That the clearing out of a vile slum is a public use, I have no doubt. Nor do I believe that our courts would hold otherwise.

Whether our courts would hold the building of dwellings on such sites to be sold or rented out to citizens to be a public use is another question. I very much fear that they would not. And that they would say that the power of the state could not be invoked to take away his property from one private citizen to give it to another citizen for his use and enjoyment.

It is always rash to prophesy the future, however. Our courts have been very quick to reflect public sentiment; and it may easily be that a few years from now they will support legislation of a kind that a few years ago would have been considered quite out of the question.

We have said there were no legal principles in the way of getting rid of our slums. If there were such legal principles in the way of action, those principles would have to stand aside. As the great Italian historian Ferrero aptly puts it:

"There is, however, nothing on earth, that is at the same time more stable and more fragile than a legal principle. It will resist for centuries all the criticisms of reason, all the protests of sentiment, and all the assaults of opposed interests, only to fall in a few weeks when overwhelmed by a war or a revolution."

And so, I ask you men and women who are concerned with the planning of our cities, whether the time has not come when we should set ourselves resolutely to the task of cutting out these cancers on the body politic, and whether we should not, with face to the future and with our motto 'Slumless America' begin the great task of the replanning of our cities?

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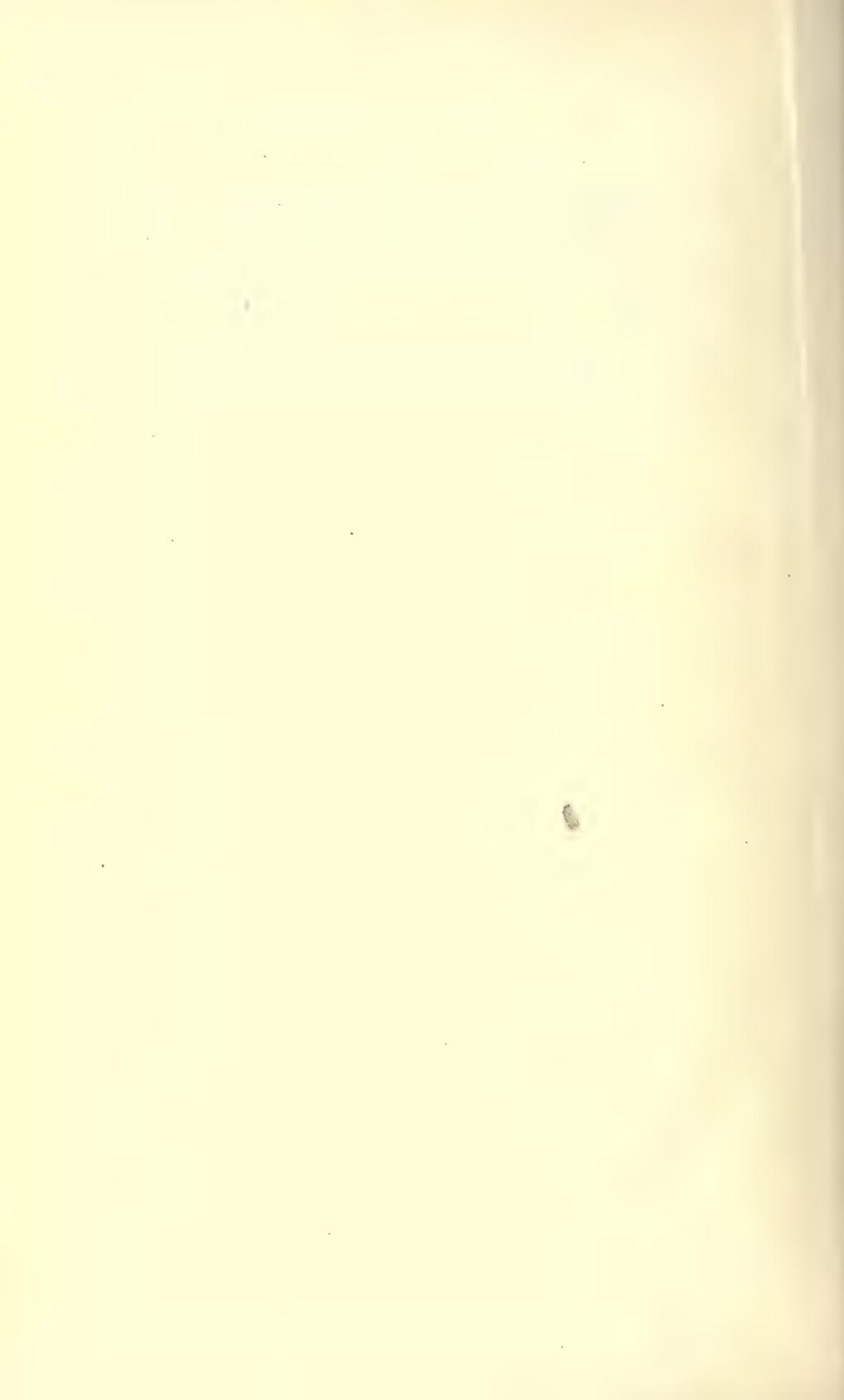
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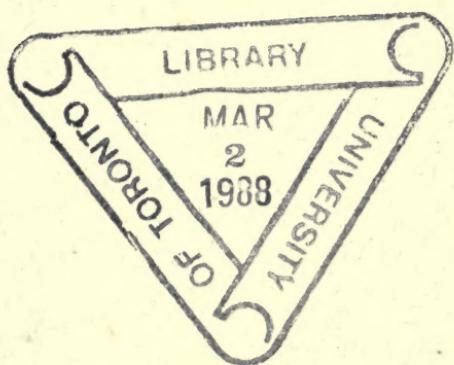
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